Installation, Operation and Maintenance

Bulletin OM45TFD
Revision C

Type ESA45AA-( ), ESA45AAPT-( )

4.5-Meter Transportable ESA

4.5-Meter Transportable Earth Station Antenna

Andrew Corporation
10500 West 153rd Street
Orland Park, IL U.S.A. 60462

Telephone: 708-349-3300
FAX (U.S.A.): 1-800-349-5444
Internet: http://www.andrew.com

Customer Service, 24 hours: U.S.A. • Canada • Mexico: 1-800-255-1479
U.K.: 0800 250055 • Republic of Ireland: 1 800 535358
Other Europe: +44 1592 782612

15 Augustl, 2005
Copyright © 2005 by Andrew Corporation

Table of Contents

Foreword

Purpose 3
Content 3
Proprietary Data 3
Information and Assistance 3
Notice 3

Section 1

Introduction 4
General 4
Description. 5
Performance Specifications 6
Technical Assistance 6

Section 2

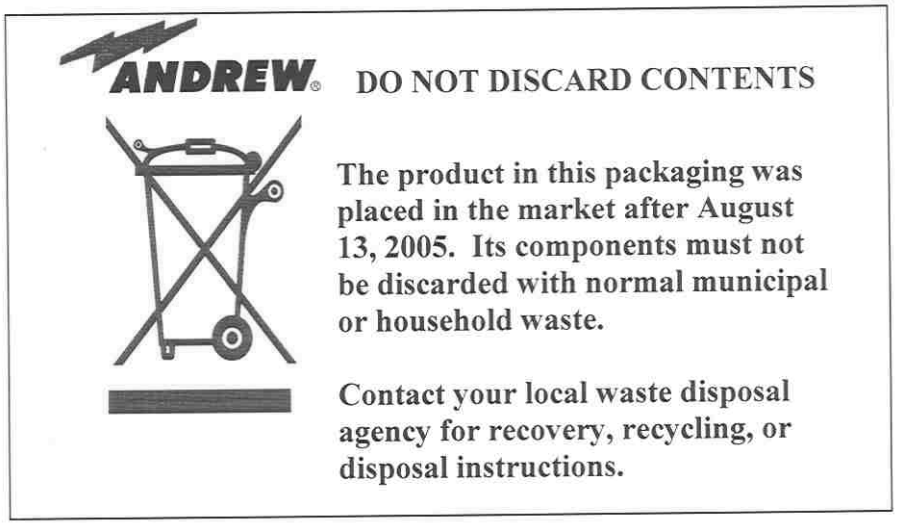
Operation
Normal System Set-Up Procedure 9
Stowing Procedure 9
Towing 9

Section 3

Periodic Preventive Maintenance
General 12
Inspection and Preventive Maintenance 12
Preservation of Component Parts 14
Lubrication 15

Section 4

Drawings 17


ANDREW
DO NOT DISCARD CONTENTS
The product in this packaging was placed in the market after August 13, 2005. Its components must not be discarded with normal municipal or household waste.
Contact your local waste disposal agency for recovery, recycling, or disposal instructions.

Foreword

Purpose

The scope of this manual is to provide preventive maintenance information together with detailed operational procedures that are required to support maintenance of a 4.5-Meter Transportable Receive/Transmit Earth Station Antenna. The manual is comprised of five distinct sections to provide convenient reference for authorized operator/service personnel requiring technical information on general system or specific subsystem equipment.

Content

This manual is divided into five distinct sections each of which deals with a specific technical topic relating to system/component subsystem information. The major divisions of the manual are described and listed under the following headings:

1. Introduction - describes overall manual content, equipment purpose and brief description of the subsystems/components.

2. Operation - describes general operational procedures of the applicable electro-mechanical subsystems required during performance of the earth station system.

3. Preventive Maintenance - describes periodic preventive maintenance procedures on electro-mechanical components and subsystems required to maintain proper functional operation of the earth station system.

4. Drawings - includes assembly installation drawings, interface wiring diagrams between electro-mechanical earth-station subsystem components and schematic diagrams of the subsystem components.

Proprietary Data

The technical data contained herein is proprietary to ANDREW CORPORATION. It is intended for use in operation and maintenance of ANDREW equipment. This data shall not be disclosed or duplicated, in whole or in part, without express written consent of ANDREW CORPORATION.

Notice

The installation, maintenance, operation or removal of antenna systems requires qualified, experienced personnel. Andrew operation and maintenance instructions have been written for such personnel. Antenna systems should be inspected once a month or as otherwise directed by qualified personnel to verify proper installation, maintenance, and condition of equipment.

Andrew disclaims any liability or responsibility for the results of improper or unsafe installation or operation practices.

Information and Assistance

For additional Andrew supplied product information or further technical assistance, contact:

Andrew Corporation
10500 W. 153rd Street
Orland Park, IL 60462
Telephone: 1+800-255-1479 (from U.S.A)
1+708-349-3300 (international)

The information contained in this manual is intended to ensure complete coverage on all Andrew models (ESA45AA/AAPT) of the 4.5-Meter Transportable Receive/Transmit Earth Station Antenna System. Thoroughly review all information provided and utilize procedures applicable only to your specific system.

Notice

All installation, adjustment and operational information must be strictly adhered to in order to achieve warranted performance specifications.

Section 1 - Introduction

1.0 Introduction

1.1 This technical manual contains preventive maintenance information for the 4.5-Meter Transportable Receive/Transmit Earth Station Antenna (see Figure 1). The basic equipment and accessories are either manufactured or design controlled by Andrew Corporation, Orland Park, Illinois.

1.2 The manual contains all essential information required for the performance of complete preventive maintenance by qualified station engineering personnel.

1.3 The operating section includes detailed equipment operating procedures required during normal system operation, while the preventive maintenance section enables qualified personnel to maintain the equipment using standard hand tools. The drawing section provides installation, mechanical, electro-mechanical subsystem and subsystem component reference drawings as an aid for maintenance and operation. All items covered are designated to be within the operating and maintenance capabilities of the average station engineering staff personnel.

Figure 1. 4.5-Meter Transportable Receive/Transmit Earth Station Antenna

2.0 General

2.1 The **ESA45AA** is a Trifold™ 4.5m reflector assembly incorporating a manually operated polarization adjustment device. This reflector assembly accepts all Andrew feed systems. Only Andrew (TF) feed systems will comply with electrical specifications in Section 4. When attaching this assembly to other than an Andrew type positioner, refer to Figure 2 and instruction drawings 239343 and 239331 for appropriate reflector/positioner interface and mounting dimensional details.

2.2 The **ESA45AAPT** is the same as the ESA45AA above mounted on a tandem axle trailer. The trailer has four uniquely designed outriggers for ultimate pointing accuracy across the entire range of operation. The trailer has a load capacity of 10,000 pounds and can be towed by a sufficiently sized vehicle.

3.0 Description

3.1 Primary Radiator. The primary radiator design consists of a variety of interchangeable feed systems for wide ranges of applications. These feed systems are patented beam shaping prime focus designs with the input/output ports terminated near the focal point of the reflector. Construction material is aluminum and/or brass with stainless steel fasteners. Each feed system includes a carrying/shipping/storage case and collapsible struts.

3.2 Main Reflector. The Trifold™ reflector assembly is fabricated from aluminum alloy sheet. The reflector assembly is spun on a precision steel chuck to extremely close tolerances. The reflector is then manufactured in three pieces with the two side pieces being hinged to allow them to swing inward for stowing and transport. A reinforced aluminum panel torsion box forms the primary structure of the reflector assembly. The reflector assembly is mounted to the positioner via a mounting ring. All fasteners are of stainless or hot-dipped galvanized steel. Quick release fasteners are incorporated to assure continuous repeatability during stowing and deployment over many years of use.

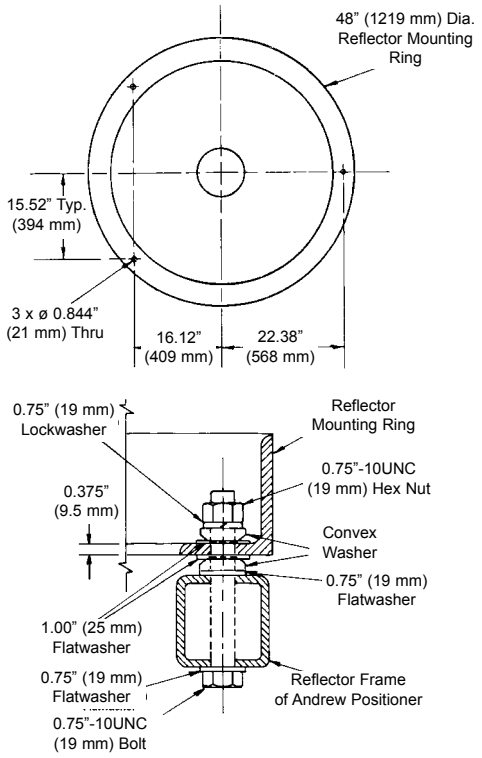
3.3 Manual Motorizable Positioner. This heavy duty EL over AZ positioner supports the 4.5m Trifold™ reflector assembly and mounts to any flat surface, such as roof tops, concrete slabs, flat bed trailers, etc. Antenna azimuth positioning is performed by a gear box interfaced to a large chain driven wheel. Support of the wheel and precision rotation is accomplished via cam followers as guidance. Antenna elevation positioning is driven from its 90° stow position to 5° of true elevation by a machine screw jack with aload capacity of 10 tons. An elevation vernier is provided to read the elevation angle of the reflector assembly. The positioner is easily upgradeable to motorization at any time.

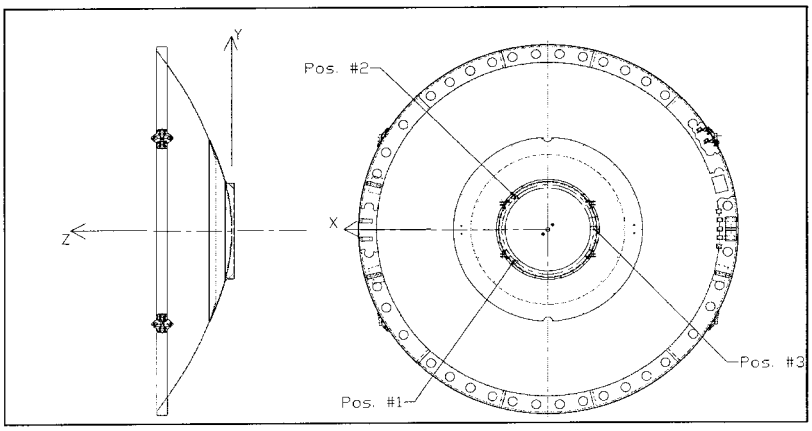
3.4 Trailer. The trailer assembly is a welded steel structure that includes four outriggers for maximum stability. The trailer is provided with a 2-5/16” ball hitch as a standard. Optional hitch assemblies are available. Optional storage boxes are also available for mounting on the trailer assembly.

3.5 Options. Available options include:

Tx Cross-Axis Waveguide Kits	**Loss**
Type 206520-137-1 WM37 (one run)	.5 dB
Type 206520-137-2 WR 137 (two runs)	.5/.5 dB
Type 206520-75-1 WR75 (one run)	.8 dB
Type 206520-75-2 WR75 (two runs)	.8/.8 dB

Type MKAPVSI azimuth and elevation motorization kit.
Type PLKPFAP-VSI polarization motorization kit.
Type STWKAP storage box for trailer.
Type TF feed systems - refer to Table 1.





4.5 Meter Interface Loads

	Pos. 1	Pos. 2	Pos. 3
Fx	-2912	2779	-23
Fy	-2969	-2824	4793
Fz	-1636	-1532	1287
Mx	-7412	-6932	-7701
My	7471	-7161	652
Mz	361	-393	91

Figure 2. Reflector to Positioner Attachment Detail

4.0 Performance Specifications

4.1 Refer below for the most pertinent performance specifications applicable to the 4.5-Meter Transportable Receive/Transmit Earth Station Antenna System. Refer to Figures 2 and 3 for dimensional data.

Operating Frequency Band*

C-Band - Receive/Transmit	3.625-4.2 GHz/5.850-6.425 GHz
Ku-Band - Receive/Transmit	10.95-12.75 GHz/14.0-14.5 GHz
X-Band - Receive/Transmit	7.25-7.75 GHz/7.90-8.40 GHz

Gain*, at circular waveguide flange of feed. (dBi, ±0.2dB)

Rx Frequency	*Rx Gain*	*Tx Frequency*	*Tx Gain*
3.625 GHz	43.0	5.925 GHz	46.2
4.000 GHz	44.0	6.175 GHz	46.7
4.200 GHz	44.4	6.425 GHz	47.0
7.250 GHz	48.4	7.90 GHz	49.2
7.500 GHz	48.7	8.15 GHz	49.5
7.750 GHz	49.0	8.40 GHz	49.8
10.950 GHz	51.6	14.00 GHz	53.4
11.950 GHz	52.4	14.25 GHz	53.6
12.750 GHz	52.9	14.50 GHz	53.7

Polarization Discrimination*, (Linearly-Polarized):
C- IKu-Band >30 dB on axisr

Voltage Axial Ratio*, circularly-polarized with 2-port combiner
C-Band, <1.09:1 on axis, Tx <1.20:1 on axis, Rx
X-Band, <1.20:1 on axis, Tx <1.20:1 on axis, Rx

Beamwidth, Mid-band, Degrees	*C-Band*	*Ku-Band*	*X-Band*
3 dB Receive (Transmit)	1.22 (0.85)	0.41 (0.33)	0.66 (0.61)
15 dB Receive (Transmit)	2.47 (1.90)	0.86 (0.69)	1.40 (1.29)

Antenna Noise Temperature* - under clear sky conditions, at 68°F (20°C), at the circular waveguide flange of the feed.

Elevation	*Kelvin (C-Band)*	*Kelvin (Ku-Band)*	*Kelvin (X-Band)*
10°	32	45	45
30°	20	33	34
50°	16	30	29

Antenna VSWR*, Transmit and Receive <1.3:1

Feed Type
4.5 m Prime Focus
Reflector Material Precision-Formed Aluminum
Reflector Segments 3-Pieces, Hinged Transportable
Mount Type, when applicable El over AZ, Positioner

Antenna Pointing Range, Coarse/(Continuous)

Elevation	5-90° (85°)
Azimuth	330° (330°)
Polarization	360° (90°)

Wind Loading, Survival	125 mph (200km/h) in stow position, 65 mph (105 km/h) gusting to 80 mph (125 km/h) in any position of operation with proper anchoring
Wind Loading, Operational (motor drives)	45 mph (72 km/h), gusting to 65 mph (105 km/h)

Trailer Size:
Length 289 in (7.34 m)
Width 96 in (2.44 m)

Height, with Trifold® Antenna
4.5 m 118 in (3.0 m), with feed support
108 in (2.75 m), without feed support

Weight, with Trifold® Antenna
4.5 m 7600 lb (3447 kg)

Trailer Wheels	4, with 1 spare
Tandem Axle Assembly	12,000 lb (5455 kg) tandem with axle with 4 in (102 mm) drop
Wheel Size	14.5 in (368 mm)
Tires	G78 x 15 Nylon Bias, 8 ply, 8 **x** 14.5LT
Trailer Hitch Interface	2.312 in ball hitch (standard) Pintel hook is available as special order
Trailer Tongue Weight	650 lb (295 kg) nominal
Outrigger Jacks	4, each with 7000 lb (3282 kg) capacity
Front Leveling Jack	5000 lb (2273 kg) capacity
12 Vdc Electrical Connector	6-way, includes both male and female

24-hour Technical Assistance

For technical assistance, call the following numbers at anytime.

Call From	Call To	Telephone	Fax
North America (toll free)	U. S. A.	1-(800)-255-1479	(800)-349-5444
Any Location (International)	U. S. A.	(708)-349-3300	(708)-349-5410

Customer Service Center

The Andrew Customer Service Center gives you direct access to the information and personnel service you need, such as the following:

- Place or change orders
- Check price and delivery information
- Request technical literature

You can call from any of the following:

Call From	Telephone	Fax
North America	1-800-255-1479 (toll free)	1-(800)-349-5444 (toll free)
United Kingdom	00-800-0-255-1479 (toll free)	00-800-0-349-5444 (toll free)
Australia	0011-800-0-255-1479 (toll free)	0011-800-0-349-5444 (toll free)
China	00-800-0-255-1479 (toll free)	00-800-0-349-5444 (toll free)
New Zealand	00-800-0-255-1479 (toll free)	00-800-0-349-5444 (toll free)
Hong Kong	001-800-0-255-1479 (toll free)	001-800-0-349-5444 (toll free)

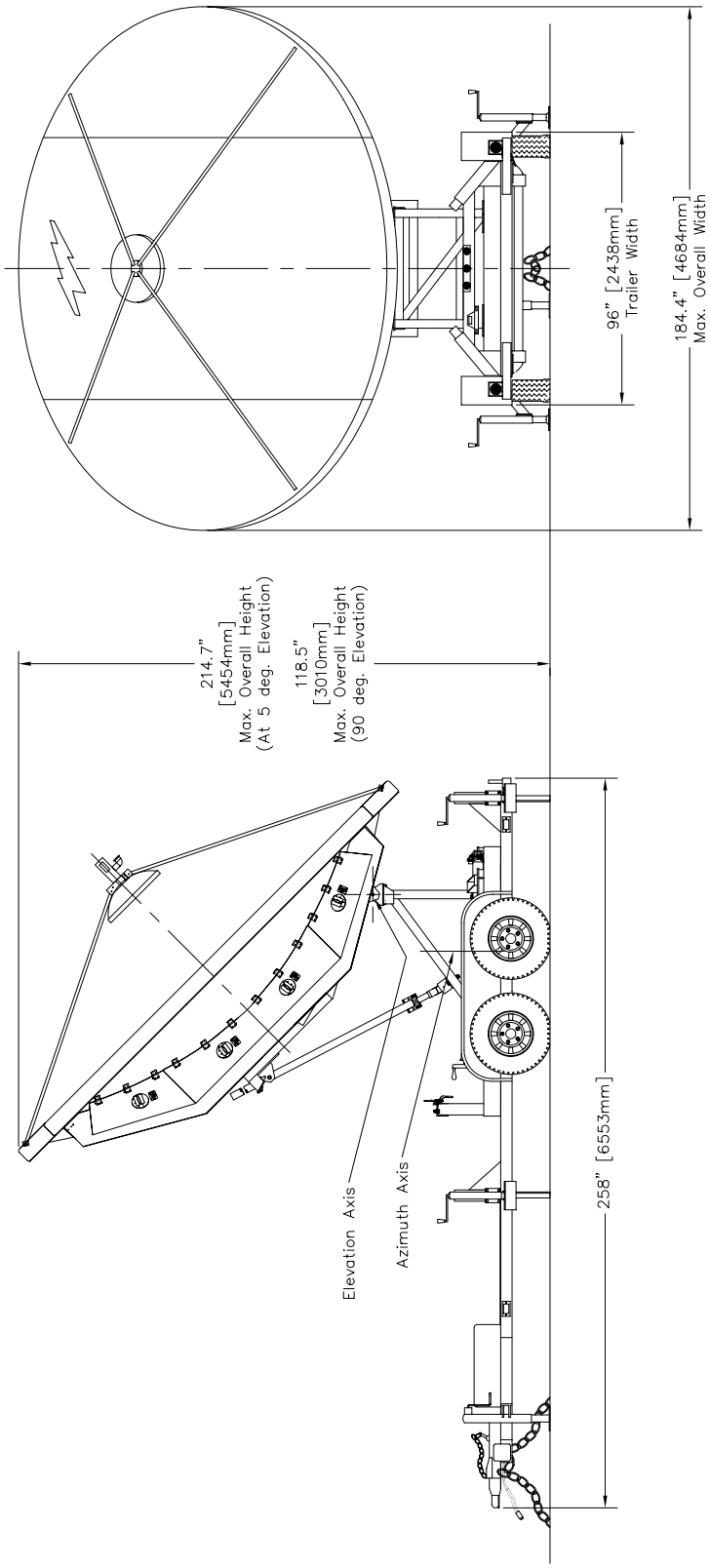


Figure 2. 4.5-Meter Transportable Antenna Dimensions

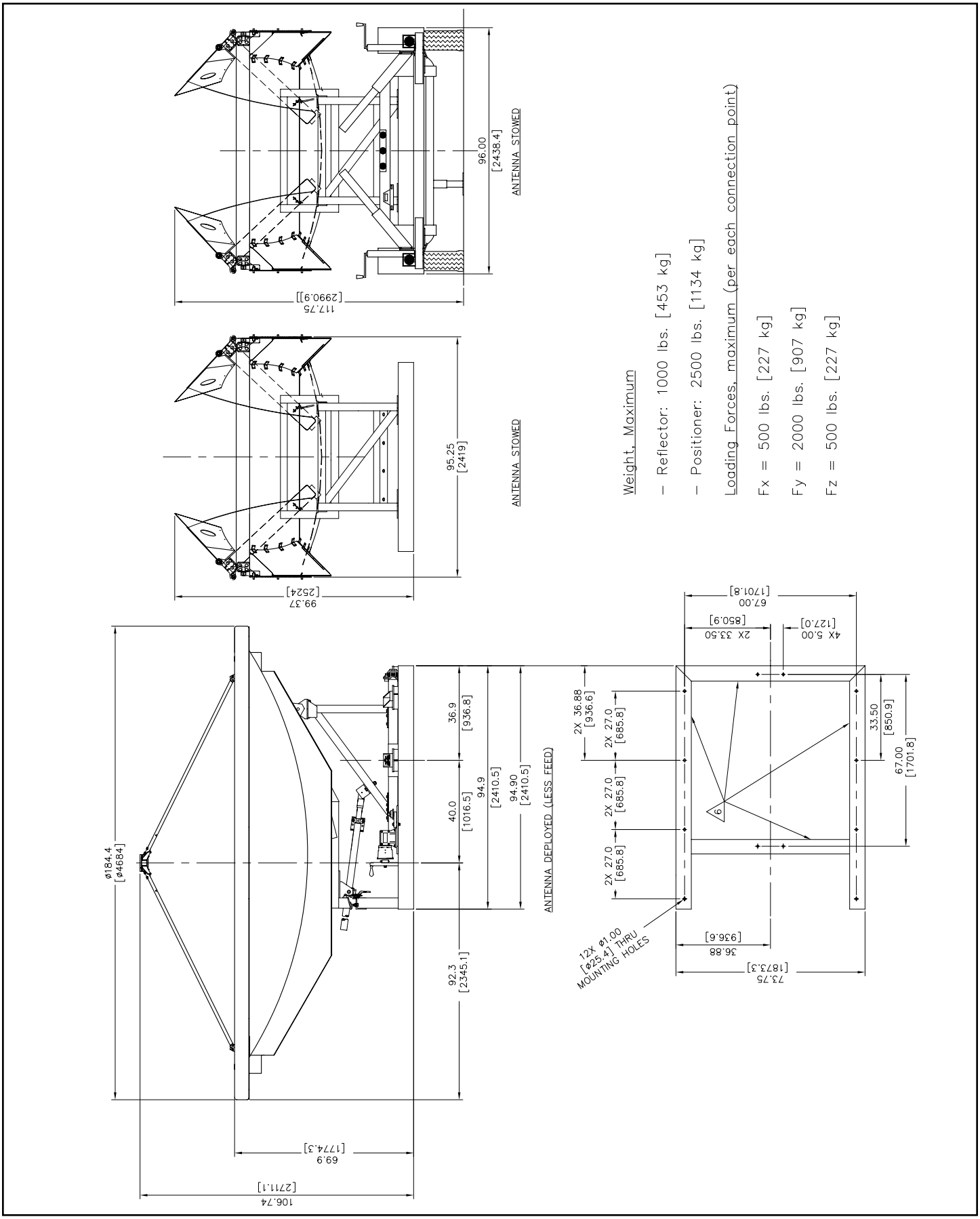


Figure 3. 4.5-Meter Antenna/Positioner Dimensional Details

Section 2 - Operation

1.0 Normal System Set-Up Procedure

WARNING: Extreme care must be taken during the following system set-up and stowing procedures to avoid bodily injury and/or equipment damage.

1.1 Choose a site which is as level as possible with the rear of trailer facing as closely as possible in the direction of the satellite.
Note: The reflector has a maximum of ±135° azimuth adJustment but set-up time and antenna stability can be improved by this positioning of trailer.

1.2 Refer to Figure 4. Release outrigger jacks at four corners of trailer by removing locking pins ard reinsert into closest applicable height adjustment holes to lock in place. Jack the trailor to a stable and close to level position as possible.

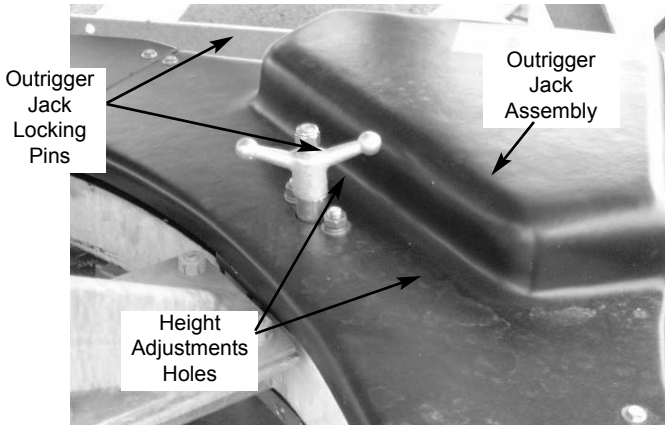
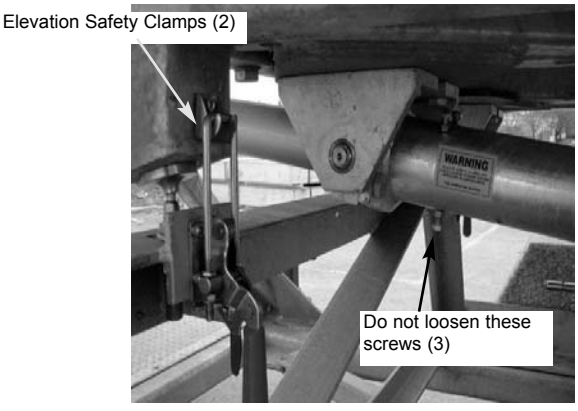
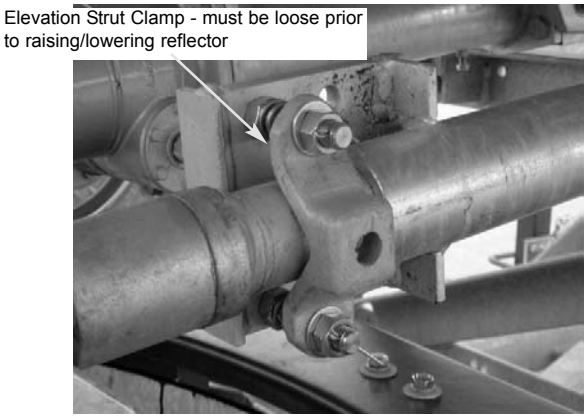


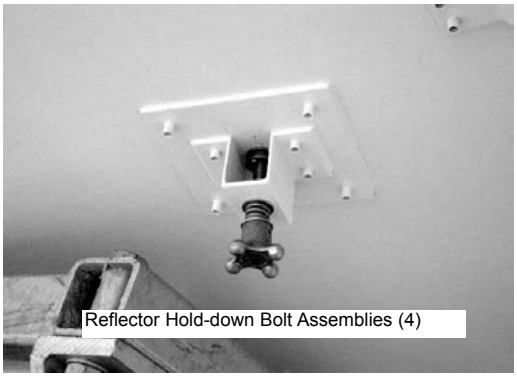
Figure 4. Outrigger Jack Extension

CAUTION: Do not use fingers to assist in pin hole alignment and ensure feet are kept away from under pad portion of outrigger jacks when jack assemblies are being lowered.

1.3 Release both elevation safety clamps, elevation strut clamp and four reflector hold-down bolts.







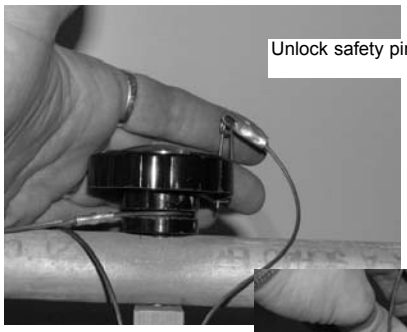
1.4 Raise reflector to approximately 15° elevation angle using supplied handwheel on elevation jack.

1.5 Slowly swing the reflector sides out into their operating position and lock in place with the two lower 1/2-turn fasteners on each side.

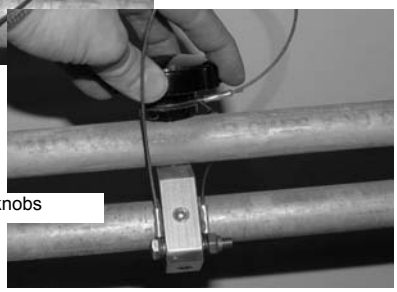
Note: Ensure alignment pins properly aligned.

1.6 Lower the reflector and lock up the remaining 1/2-turn fasteners to lock the reflector `wing' panels to main reflector.

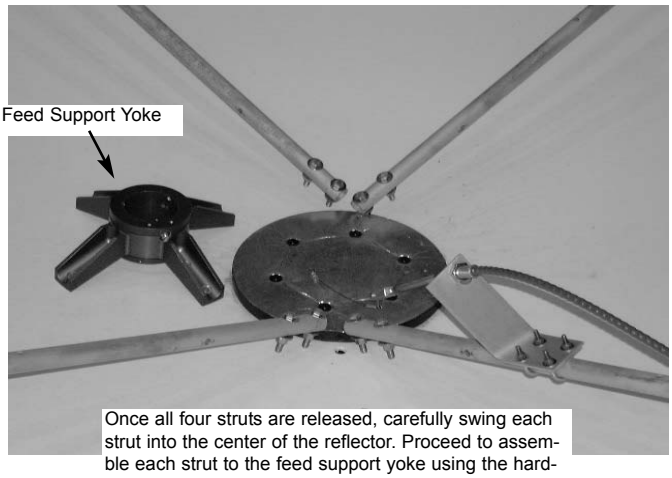
1.7 Referencing the following photographs and drawing 239351, remove feed support yoke from stowed location and using a ladder, carefully climb into the reflector and assemble the feed support struts.



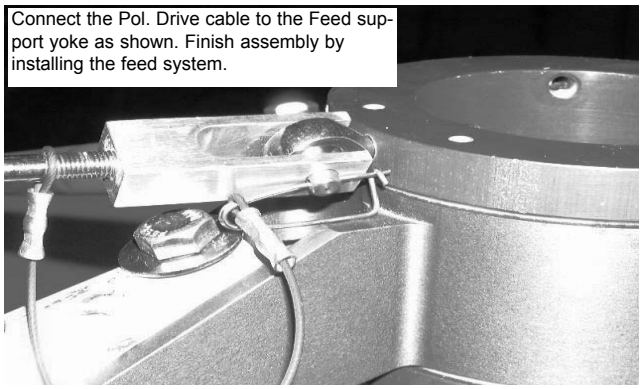
Unlock safety pins from strut clamping knobs



Loosen/remove clamping knobs



Once all four struts are released, carefully swing each strut into the center of the reflector. Proceed to assemble each strut to the feed support yoke using the hardware supplied on each strut.



Connect the Pol. Drive cable to the Feed support yoke as shown. Finish assembly by installing the feed system.

1.8 Set antenna to desired elevation angle. Remove locking pin from handwheel on elevation jack shaft by pressing quick release button on head of locking pin. Remove handwheel and reinstall on azimuth jack shaft. Align corresponding holes and insert locking pin into handwheel assembly. Release azimuth brake by rotating brake handle counterclockwise and sweep in azimuth to locate signal. After desired satellite is found, peak EL and AZ for optimum signal. Retighten azimuth brake assembly and elevation strut locking screws.

Note: Pointing accuracy of the antenna will diminish at wind speeds above 30 gusting to 45 mph. Do not operate the antenna system at wind speeds above 65 mph and temperatures outside of the range -40°F to 125°F.

2.0 Stowing Procedure

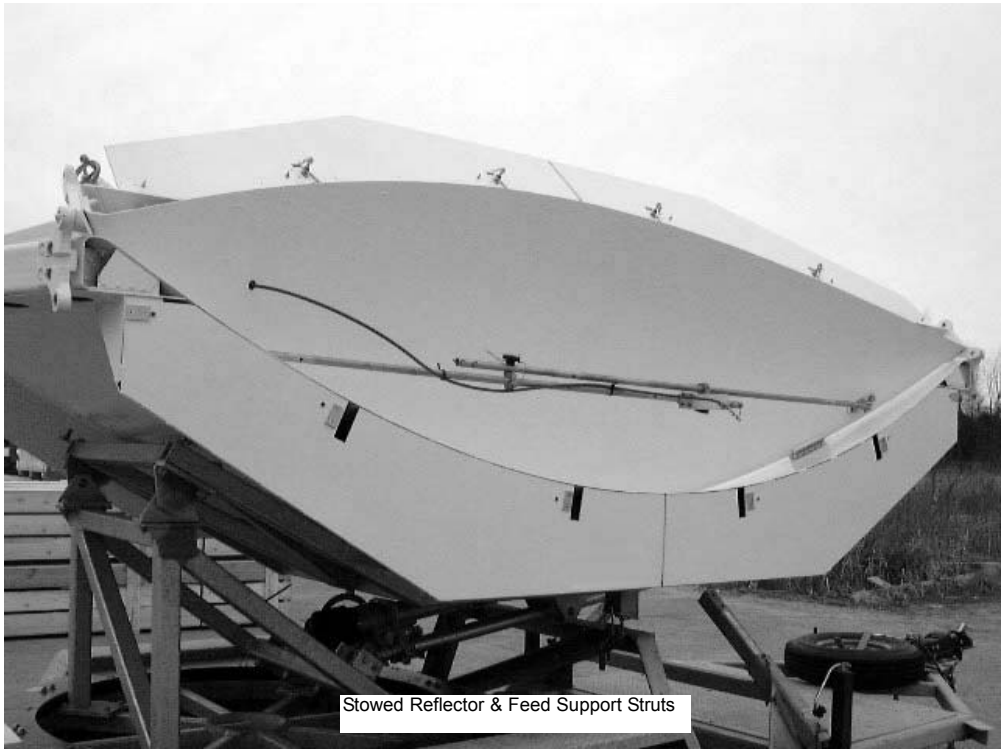
2.1 Lower the antenna to zero degress azimuth.

2.2 Disassemble the feed system and stow as required. Diassembly of the feed support struts is opposite to the assembly procedure as described above. Ensure that struts are tightly clamped together and that safety pins are reinserted into all clamp knobs.

2.3 Raise the antenna to 15° elevation. Position and swing the reflector sides **carefully** to their stowed position.

2.4 Lower the antenna to its stowed position making sure that the two positioning lugs on the bottom of the tilt bed frame make contact. Tighten azimuth brake, elevation strut clamp, and elevation safety clamps (2). Engage and rotate reflector hold down assemblies (4) in clockwise direction until springs are compressed and allowing metal-to-metal contact. Rotate hold downs an additional two turns to fully secure reflector sides in position.

NOTE: During high-wind conditions (in excess of 85 mph), ensure reflector sides are extended/locked, antenna is positioned to 90° elevation and trailer is raised on outrigger jacks.



Stowed Reflector & Feed Support Struts

3.0 Towing

CAUTION: Ensure front trailer jack is contacting ground before raising outrigger jack assemblies.

3.1 When hooking trailer to the tow vehicle, position trailer tongue over ball hitch and carefully lower jack to engage hitch assembly. Ensure that the trailer jack is fully retracted and tilted into its tow position, prior to towing.

3.2 The safety chains should be crossed under the tongue and connected to the tow vehicle. The breakaway cable from the hydraulic brake mechanism in the trailer hitch should be connected solidly to the frame or bumper of the tow vehicle with just enough slack to allow cornering.

3.3 Hook up the electrical pin connector and check that all brake, signal and turning lights are properly functioning.

Section 3 - Periodic Preventive Maintenance

1.0 General

1.1 This section contains periodic preventive maintenance instructions for the 4.5-Meter Transportable Earth Station Antenna. Provided in this section are inspection and preventive maintenance procedures including cleaning, lubrication and painting procedures deemed within the capabilities of the average station technician. Refer to the applicable vendor manuals for any repair procedures not included in this section yet designated as capable of being performed in the "field" rather than requiring specialized facilities, tools and/or test equipment as well as technically trained personnel.

1.2 An operational checkout procedure provides an accurate indication of the overall earth station performance and should be performed at monthly intervals or after extended periods of storage or long distances of travel (in excess of 500 miles). This procedure is essentially performed during the various modes of normal operation of the earth station. In addition, the operational checkout procedure should be performed after any repairs or adjustments have been made, or whenever the earth station is suspected of degraded operation. If any discrepancy in performance exists and the condition cannot be readily remedied to return the earth station to a proper operating condition, conventional troubleshooting procedures should be followed to locate the fault. After the trouble is determined and the repairs effected, a final operational checkout procedure should be performed to verify that all discrepancies have been corrected.

Warning:

Service personnel must at all times observe all safety regulations. Do not perform any maintenance task on the equipment without first turning off the main power supply. Under certain conditions, dangerous potentials may exist when the main supply power controls are in the off position due to charges retained by capacitors. Always discharge and ground a circuit after removing power.

2.0 Inspection and Preventive Maintenance

2.1 The following paragraphs describe the inspection and preventive maintenance procedures for the earth station. These instructions include general cleaning and inspection, the preservation of metal parts and lubrication. Periodic replacement of assemblies or components as a preventive measure is not required. Malfunctions of the earth station can be traced to components, assemblies and parts through the use of conventional troubleshooting procedures.

2.2 General Cleaning. To prevent the excessive accumulation of dust and dirt as well as the removal of such contaminants, thoroughly clean the equipment whenever visually inspecting the earth station components. No special cleaning procedures are required. However, a thorough cleaning in accordance with the following procedures is required to assure continued trouble-free operation.

Warning:

Use cleaning solvents outside or in a well ventilated room with free air circulation. Avoid breathing fumes and excessive skin contact with the solvents. Keep solvents away from open flame.

A. Electrical Parts. Minor cleaning, such as the removal of dust and loose foreign particles can be accomplished by vacuuming, by using a soft brush or lint-free cloth or by blowing out the dust and dirt with low pressure (5 to 25 psi), dry compressed air. When using air to blow off the contaminants, either avoid or be careful when directing the air stream on delicate parts. To remove imbedded dirt, grease or oil from electrical parts, use a 50% solution of isopropyl (rubbing) alcohol and apply with a soft bristle brush. It may be necessary to brush some parts vigorously with a stiff bristle brush to remove imbedded and hardened dirt particles. If possible, avoid excessive use of cleaning solvent on electrical insulation. After cleaning, allow the cleaned parts to dry for 10 to 15 minutes before placing the equipment into operation.

B. Mechanical Parts. Clean mechanical parts by first removing dust, dirt and other loose contaminants with a scraper, stiff brush (bristle, or wire in the case of rust or other corrosion) or cloth or compressed air at 25 to 40 psi. Any accumulated imbedded dirt, corrosion, grease or oil deposits that require further cleaning may be removed with a bristle or wire brush and a cleaning solvent such as trichlorethylene, or equal. Ensure that the surfaces of the reflector alignment pins, 1/4-turn fastners with corresponding spacers and adjacent rib areas remain free of dirt buildup, cinders and any other foreign matter. After cleaninq, allow the cleaned parts to dry completely before placing the equipment into operation. Clean and paint aluminum, galvanized and plastic surfaces in accordance with the procedures outlined in paragraph 3.0, Preservation of Component Parts.

2.3 Inspection. The frequency of inspection is contingent upon the user's individual standards and the operational environment in which the earth station is located. However, a visual inspection of the earth station components should be performed at least monthly. Where there are no established wear limits, perform a visual inspection to locate worn or damaged parts which could cause improper functioning of the earth station. Do not attempt to clean resolver assemblies or the feed motorization assembly unless they are malfunctioning. Inspect the surface of the reflector to ensure the surface is free of dirt, cinders or other foreign matter. In the absence of any special inspection requirements, operational tests are the most effective means of isolating parts and assemblies requiring further inspection. Any condition noted during inspection that may preclude continued proper operation of the earth station prior to the next scheduled inspection should be noted. The discrepant condition should be corrected (repaired or replaced) immediately or at the conclusion of the inspection procedure.

A. Trailer

1. Check tire pressure, it should be maintained at 85 psi.

2. Lubricate the four corner jacks and the trailer jack.

3. Check ball on the towing vehicle to ensure it has not been damaged or worn. The brake system will not function properly unless the ball size is 2-5/16 inch diameter.

4. Check the fluid level in the brake system master cylinder and refill it as required to 1/2 inch below the top of the filler cap. Use only DOT 3 automotive brake fluid.

5. Check brake linings for wear especially if the trailer is being towed often. Replace shoes if necessary.

6. Lubricate all links and pivots on the surge brake system to ensure ease of operation, if required.

7. Adjust brakes as per owner's maintenance manual.

8. Inspect all wiring and lights for wear or damage which may have occurred during towing.

9. Visually inspect for loose or missing hardware. Replace and/or retorque as required.

B. Antenna/Positioner. Inspection of the antenna conforms generally to standard visual inspection procedures performed on electromechanical equipment. In addition to these standard procedures, perform the following checks and visual inspections for the specific conditions noted:

1. Inspect all wiring, flexible waveguide, rigid waveguide and cables for discoloration and burned insulation, moisture entry, corrosion, dirt, breaks,security of connection, physical damage and other signs of deterioration. Examine connections for dirt, corrosion and mechanical defects. Check for loose or broken lacing and cut, abraded, frayed, brittle and cracked insulation.

2. Examine connectors for corrosion, broken inserts and stripped threads. Check connector shells for distortion and dents, and contact pins for bends, misalignment or other deformities. Check connector inserts for cracks, and carbon tracking, burns or charring indicating arc-over.

3. Check all electrical components for dirt, cracks, chips, breaks, discoloration and other signs of deterioration and damage. A discolored, blistered or burnt condition is evidence of overload.

4. Inspect the drive chain on the azimuth turn table as well as cam followers. These parts do require lubrication but a check should be done to ensure they are functioning properly.

5. Operate the azimuth and elevation drives as well as the feed rotation in both the plus and minus direction at least once every three weeks during antenna down time. Ensure that the antenna is under observation during operation to prevent injury or damage. Check that the limft swftches provided at the end points stop antenna and feed movement and limit travel to prevent structural interference and damage. Periodically check all limit switch mounting hardware to ensure that connections are tight. Check motor and limit switch junction boxes for possible water entry. Check the actuating arm on each feed limft switch for free movement without binding.

6. Inspect the elevation jackscrew boot for security of attachment at both ends, for abrasion, tears, cuts, brittleness and other damage that may expose the jackscrew to the environment (water, dust, etc.). Minor repairs can be made with RTV.

7. After system operation, remove feed system and visually inspect the feed window for dirt and the feed and feed window for distortion, foreign object damage and environmental deterioration due to ice and snow, dust, rain, hail and highwinds, etc., which may cause electrical component and/or structural deformation.

8. Check the cable attachment to the resolvers and the cable insulation for cuts, cracking, abrasion and other deterioration. Check the resolvers for a secure mechanical attachment.

9. Visually inspect all mechanical parts for freedom of operation with no misalignment, binding or interference. Check all cabling for sufficient slack to prevent cable strain as well as adequate restraint to prevent abrasion or chaffing during antenna and feed movement.

10. Check security of antenna mounting and interconnecting assembly hardware. Replace rather than tighten any loose A-325 structural hardware. The hardware distorts at initial installation and once loosened, will not maintain the required high-strength friction connection. All other assembly and installation hardware should be tightened to its original torqued condition. Use a thread-locking compound when installing new hardware. Do not use a wrench with a lever arm longer than two feet.

11. Examine painted aluminum and galvanized surfaces and touch-up where required in accordance with the procedures outlined in paragraph 3.0, Preservation of Component Parts.

CAUTION: Do not paint exposed surface of 1/4-turn fastener spacers.

A-325 Hardware Tensioning Procedure

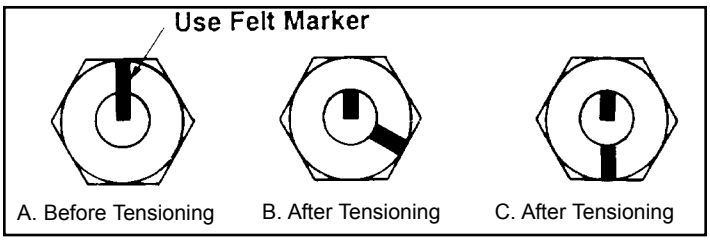
1. Lubricate bolt threads with stick wax to reduce friction. Do not allow wax under flat washer.

2. After connections are completed, tighten bolts until surfaces are joined and nuts are snug. Do not proceed with Steps 3 and 4 below unless the connection is final. If bolts are loosened after Steps 3 and 4, discard and replace with new hardware. Repeat all steps.

3. Mark nuts and end of bolts with straight line. See Figure A.

4. Tighten nuts further with extra long wrench or power wrench until nuts are moved an additional 1/3 turn (120° ±30°). See Figure B.

5. If bolt length exceeds four diameters, further tighten nuts until they are moved a total of 180°. See Figure C.



3.0 Preservation of Component Parts

3.1 Aluminum Parts

A. Remove all loose paint and corrosion by scraping, wire brushing or using steel wool. If using steel wool near the feed window, make sure that none remains on the feed window. Edges of existing paint can be blended with the metal surface by using a fine grit sandpaper. Wipe the surface to be painted with a soft rag dampened in trichlorethylene, lacquer thinner or equal. Be certain to remove all loose paint, corrosion, imbedded dirt, grease and oil deposits or the paint will not adhere to the surface. Lacquer thinner will dissolve paint if applied heavily and rubbed vigorously. The reflector may be washed with plain water if necessary. Do not use bleach, soap solutions or kerosene as it is difficult to remove the residue. Allow the cleaned surface to dry thoroughly before priming.

B. Prime the cleaned surface by applying zincchromate primer or equivalent. The primer can be applied with a brush, roller or pressurized spray. If necessary, thin the primer with lacquer thinner to the proper consistency. Feather primer onto adjacent painted surfaces. Allow primer to thoroughly dry before applying the finish paint coat.

C. Use only a highly diffusive white paint to paint the inside of the reflector. This type of paint disperses light rays, reducing the focusing effect of the sun's radiation, thereby reducing heat buildup caused by the focused sun's rays on the feed system. All other surfaces of the antenna may be painted with a gloss white enamel paint. The paint can be applied with a brush, roller or pressurized spray. If necessary, thin the paint with the appropriate thinner to the proper consistency. Thoroughly paint over the primed surfaces and blend with the existing painted surface.

D. Andrew Type ESPNTK-2 Touch-Up Paint Kit is available for restoring damaged paint on aluminum surfaces.

3.2 Painted and Galvanized Steel Surfaces

A. Remove all loose paint and corrosion by scraping, wire brushing or using steel wool. Edges of existing paint can be blended with the metal surface by using a fine grit sandpaper. Wipe the surface to be painted with a soft rag dampened in trichlorethylene, lacquer thinner or equal. Be certain to remove all loose paint, corrosion, imbedded dirt, grease and oil deposits orthe paint will not adhere to the surface. Lacquer thinner will dissolve paint if applied heavily and rubbed vigorously. Do not use bleach, soap solutions or kerosene as it is diffcult to remove the residue. Allow the cleaned surface to dry thoroughly before painting.

B. Galvanized surfaces may be painted with a zinc-rich paint. The paint can be applied with a brush, roller or pressurized spray. If necessary, thin the paint with the appropriate thinner to the proper consistency. Thoroughly paint over the cleaned surface and blend with the existing painted surface.

C. Painted surfaces of the antenna other than the inside of the reflector may be painted with a gloss white enamel paint. The paint can be applied with a brush, roller or pressurized spray. If necessary, thin the paint with the appropriate thinner to the proper consistency. Thoroughly paint over the primed surfaces and blend with the existing painted surface.

D. Andrew Touch-Up Paint Kit is available for restoring damaged paint and galvanized surfaces due to corrosion.

E. Proper cleaning of plastic components may be performed in accordance with the following procedure:

3.3 Plastic Parts

Proper cleaning of plastic components may be performed in accordance with the following procedure:

A. Remove all dust and/or dirt from the component surface using a soft cloth or chamois dampened with a mild detergent or similar household cleaner.

Note: Do not use any abrasive cleansers or strong chemicals to clean the assembly which may cause damage to the assembly surface.

B. Allow the cleaned surface to thoroughly dry and sparingly apply an automotive type wax to the surface of the assembly.

C. Lightly polish the surface using a clean, dry rag.

4.0 Lubrication

4.1 For long life and trouble-free operation, be certain not to extend the lubrication schedule beyond the frequency recommended in Table 2, Lubrication Chart. The frequency should be shortened if the antenna is subjected to extensive use or an adverse environment (e.g. high temperature, extended periods of rainfall, high humidity, dust storms, etc.). Any component or part should immediately be lubricated if during inspection or operation, rough, jarring, or intermittent motion is noted, or if squeaky or other unusual noises are heard. Use the lubricants recommended in paragraph 4.6. Do not over-lubricate. Over-lubrication often can be as damaging as under-lubrication. Prior to the application of lubricant to any parts, use a clean cloth and/or bristle brush and remove any old lubricant to prevent an excessive buildup. Be certain to remove any protective caps and clean off each lubrication fitting prior to injecting fresh grease.

A. Periodically inspect lifting screw on jackscrew assembly to ensure adequate lubrication. Loosen jackscrew boot clamps to expose the lifting screw assembly. Fully extend jackscrew assembly being careful not to exceed the preset mechanical limits. Brush a thin coating of Mobil SHC-32 grease on exposed lifting screw. Replace boot and attach corresponding boot clamps. If lifting screw is rusty, remove existing lubricant with solvent and wire brush the rusted area. Rinse with solvent and apply fresh grease. The elevation jackscrew assembly is equipped with two grease fittings and a corresponding pipe plug on the jack housing. Remove the appropriate pipe plug and fill unit with grease until lubricant seeps from the pipe plug opening. Replace and securely tighten the pipe plug.

B. Periodically inspect and remove dust or dirt deposits from the motor housings to avoid hindering the heat exchange with the ambient air.

4.3 Motor Gearbox/Housing Fill and Drain Requirements

A. A slight dirt accumulation on the air vent screw through splash oil cannot be avoided, however, keep vent screw clean to ensure proper pressure compensation. The initial oil change of the new gear box should be performed at the end of three months of operation. Under normal conditions, the gear box oil should be changed after every six months of operation after the initial oil change. Under severe environmental conditions, the oil may have to be changed every three months. Examine a sample of the oil to help determine the appropriate interval. If the antenna is to remain out of operation for more than two months, it is recommended that the gear box be completely filled with oil to prohibit rust and corrosion in the housing. Be certain to drain the excess oil prior to placing the antenna back into operation.

B. To change the oil, remove the drain plugs and level plugs, and drain the oil using a 1-1/2 quart container. Reinstall the drain plugs. Remove the filler plugs. Using an appropriate funnel, fill the gear box with the indicated oil up to the level plug (refer to Table 2). Reinstall the level and tiller plugs.

4.4 Drive Chain Lubrication Requirements

A. Remove drive cover and apply open gear lubricant to surface of drive and idler sprockets.

B. Remove two (2) sections of the side cover by removing attaching hardware and apply indicated lubricant to full length of chain with brush. Rotate positioner in azimuth for total coverage. Replace side cover sections.

4.5 Cam Followers and Azimuth Ring Lubrication

A. Cam followers are filled with Mobilux EP-2 grease and under normal conditions, will not require refilling. However, periodic surface coverage with open gear lubricant is required. Both the cam follower and azimuth ring surfaces may be brush lubricated without removal of sidecover assemblies.

4.6. Lubricant Characteristics

A. Mobil Temp SHC-32[tm] - A non-soap hydrocarbon fluid type grease. Operating temperature range is -65° to+ 350° F (-54° to +177°C).

B. Mobil SHC-624[tm] - A low temperature synthetic oil for worm gear reducers. Operating temperature range is -40° to + 200° F (-40° to +93° C).

C. Open Gear Lubricant - A non-flammable asphaltic type aerosol lubricant. “REALFILM - EVAPO-H OPEN GEAR SHIELD” or equivalent.

Components to be Lubricated	Frequency (months)	Type of Service	Lube Type	No. of Lube Points or Lube Quantity	Andrew Type Number
Chain and Sprocket Surfaces	As Required	Brush	Open gear lubricant	Surface Coverage**	220186
Azimuth/Elevation Gear Box	6	Pipe Plug	Mobil SHC-624 [1]	*	47497
Idler Sprocket Bearing	3	Pressure Fitting	Mobil Temp SHC-32 [1]	2	49208
Elevation Jackscrew Housing	3	Pressure Fitting	Mobil Temp SHC-32 [1]	2	49208
Elevation Jackscrew Assembly	3	Brush	Mobil Temp SHC-32 [1]	Surface Coverage	49208
Cam Followers and Azimuth Ring Mating Surfaces	6	Brush	Open gear lubricant	20 Cam Followers and Ring Surface Coverage**	220186

*Manual systems require 1-1/2 pints of oil, while motorized versions are filled to level plug.

**Spray a small portion of lubricant in a clean container and apply by brush to avoid contamination of adjacent antenna/positioner components.

Table 2. Lubrication Chart

Inspection requires checking for visible signs of oil leakage, draining, replacing and adding oil to ensure appropriate oil level requirements. Refer to paragraph 4.3 for procedure and recommended intervals between inspection. Excessively dirty oil will require fresh oil replacement. If oil leakage is found to be excessive, determine cause and perform required corrective action. Periodic inspection procedures can be less frequent after first or second scheduled inspections.

1 - Mobil Temp SHC32 and Mobil SHC624 are trademarks of Exxon Mobil Corporation.

Section 4 - Drawings

1. This section contains installation/drawings and wiring and schematic diagrams for the 4.5-Meter Transportable Receive/Transmit Earth Station Antenna System.

2. The installation drawings describe the subsystem assembly and the mechanical interface between system component assemblies and the vehicle.

3. The wiring and schematic diagrams illustrate the interface between electromechanical subsystem components.

4. The drawings contained in this section include:

Drawing Description	Type ESA45AA-( )	Type ESA45AAPT-( )
Positioner/Trailer Interface	-----	239331
Reflector/Positioner Interface	-----	239343
Manual Polarization Drive	239351	239351

DWG NO. 239331 SH 1

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1982

GENERAL

READ THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY. FOLLOW THE SEQUENCES FOR PROPER ASSEMBLY AND OPERATION.

CAUTION: THIS WARNING INDICATES THAT FAILURE TO FOLLOW THE PROPER PROCEDURE AT THIS POINT COULD RESULT IN DAMAGE TO THE ANTENNA AND/OR OTHER PROPERTY AND POSSIBLE INJURY TO PERSONNEL.

NOTICE

THIS INDICATES INFORMATION THAT SHOULD BE READ BEFORE PROCEEDING.

UNPACKING

CAREFULLY REMOVE ALL PARTS FROM SHIPPING BOXES. THE CONTENTS SHOULD CORRESPOND WITH THE PARTS LIST. ANY DAMAGE OR SHORTAGE WILL PREVENT SATISFACTORY ASSEMBLY, INSTALLATION, AND OPERATION OF THE ANTENNA.

NOTICE

'THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTION HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.'

TOOLS RECOMMENDED FOR PROPER INSTALLATION

QTY	DESCRIPTION
2	7/16 OPEN END OR COMBINATION WRENCH
1	1 1/4 DRIVE SOCKET
4	8FT (EYE AND EYE TYPE) NYLON SLING
2	5/8 ANCHOR SHACKLE
1	1 1/4 OPEN END OR COMBINATION WRENCH
2	1 TON CAPACITY WORKSTANDS. (JACK STANDS OR WOODEN BLOCKS CAN ALSO BE USED).
1	2 TON (MIN. CAPACITY) CRANE.

CAUTION: IT IS VERY IMPORTANT THAT THE DESIGNATED LIFTING POINTS ON THE AZIMUTH FRAME BE USED TO SUPPORT THE POSITIONER.

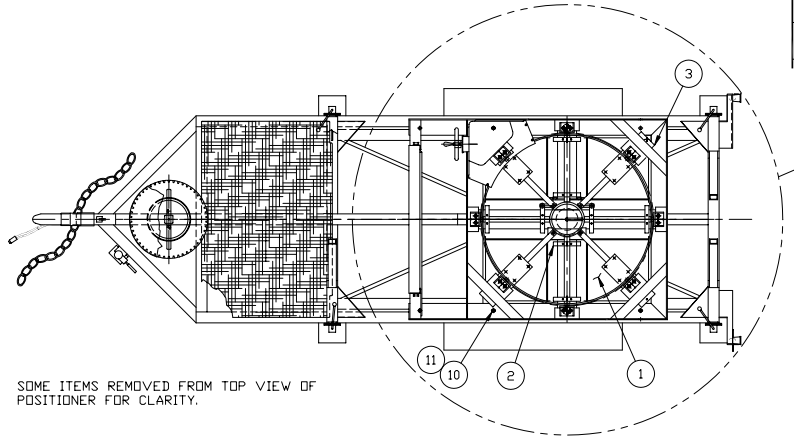
CAUTION: FIRMLY SECURE THE POSITIONER ON STANDS PRIOR TO DOING ANY WORK BELOW IT.

STEP 1. LOOSELY INSTALL PROTECTIVE SHEETS. ADJUST TO ACHIEVE UNIFORM GAP AROUND 0.75/1.00. WITH LOCTITE ON THREADS OF SCREW, TIGHTEN NUT TO ATTAIN METAL TO METAL CONTACT BETWEEN PROTECTIVE SHEETS AND POSITIONER AS SHOWN IN SECTIONS P-P AND R-R. FINAL TIGHTEN BY ROTATING NUT 2 TURNS, SLIGHTLY BENDING PROTECTIVE SHEETS.

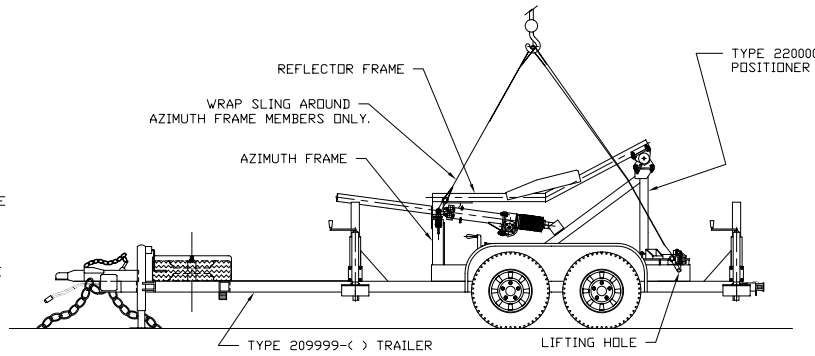
STEP 2. LOCATE THE POSITIONER ON TOP OF THE TRAILER TO ACHIEVE TONGUE WEIGHT ON HITCH APPROXIMATELY 600/800 POUNDS. MEASURE WITH SCALE OR DYNAMOMETER. ALIGN THE POSITIONER FOR SQUARENESS AND SYMMETRY TO TRAILER.

STEP 3. INSTALL RETAINING PLATES WITH CLAMPING HARDWARE. APPLY LOCTITE AND TIGHTEN AS SHOWN ON SECTIONS Q-Q AND V-V.

STEP 4. DISTORT LAST ONE OR TWO THREADS OF 0.75-10 BOLTS TO PREVENT LOSS OF HARDWARE ON THE ROAD.



SOME ITEMS REMOVED FROM TOP VIEW OF POSITIONER FOR CLARITY.



REVISIONS

MF	ZONE	REV	DESCRIPTION	DATE	APPROVED
			REL TO PRODUCTION	21AUG89	FFR
		A	UPDATE (IT 10 FROM 45980-34 TO 45980-51 CAD # WAS ES05YE1 DCN D025.64(A)	29NOV00	SLI,SJA JEK
		B	REMOVED BOM FROM DRAWING ADDED P/N 303071 TO BOM UPDATED SHT 2 WITH NEW ITEM # DCN D027.89(B)	18JUL01	WH,SJA JEK
		C	ADDED BOM BACK ON THE DRAWING ECM D029.29 CLASS B	6JAN03	PB, PAB JEK
		D	ADDED 3.9M REF TO DWG TITLE. ECM D034.34 CLASS C.	29SEP03	DD, JL BL
		E	STEP 2, 600/800 LB WAS 500/600 LB IT. 11 & 12, QTY 13 WAS 9 ECM D036.81 CLASS B	5MAR04	JD, RF DAT

PARTS LIST

QTY	ITEM NO	U OF M	ANDREW PART NO.	PART OF	DESCRIPTION
9	13	EA	303071		PLATE WASHER
13	12	EA	9974-10	220190	0.75 LOCKWASHER
13	11	EA	9997-202	220190	.75 FLAT WASHER
12	10	EA	45980-51	220190	.75-10UNC X 7.0 LG NUT & BOLT ASSY
2	9	EA	220449	220190	RETAINING PLATE
8	8	EA	220147	220190	RETAINING PLATE
4	7	EA	36165-22	220190	LOCTITE 242-05
22	6	EA	9999-57	220190	0.25-20UNC-2B HEX NUT
22	5	EA	9974-15	220190	0.25 LOCKWASHER
22	4	EA	9963-76	220190	0.25-20UNC-2Ax1.25LG HHCS
4	3	EA	220399	220190	CLAMPING STRIP-BOWED
8	2	EA	220398	220190	CLAMPING STRIP
2	1	EA	220397	220190	PROTECTIVE SHEET

MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

220190
NEXT ASSY | USED ON
APPLICATION

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
1 PLACE DECIMALS ± .1
2 PLACE DECIMALS ± .03
3 PLACE DECIMALS ± .010
ANGLE ± 0.5°
ALL SURFACES
CONT. TOL APPLY TO STOCK SIZES
SIMILAR TO
SUPERSEDES DWG OF

MATERIAL
FINISH

DRAWN	ROLLINS	29MAY89
CHECKED	RWK	17AUG89
APPD ENGRG	MR	17AUG89
APPD ENGRG	----	----
APPD MFG	----	----
APPD Q.C.		

ANDREW CORPORATION
2701 Mayhill Road
Denton, Texas U.S.A. 76208

3.7/3.9/4.5/4.6M TRANSPORTABLE ESA POSITIONER/TRAILER INSTALLATION INSTRUCTIONS

SIZE D | FSCM NO. 84147 | DWG. NO. 239331
SCALE 1=1 | SHEET 1 OF 2
PROD. GR 628 | DISTR A

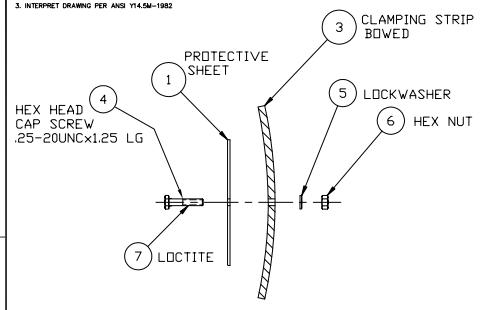
CAD FILE NO: 239331.1.E

DWG NO. 239331 SH 2

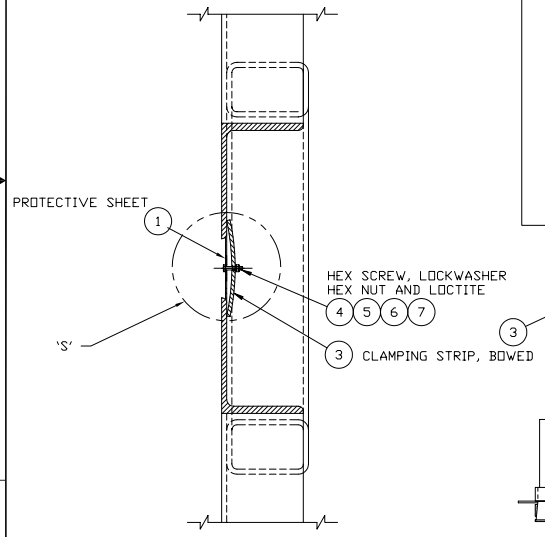
NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1982

REVISIONS

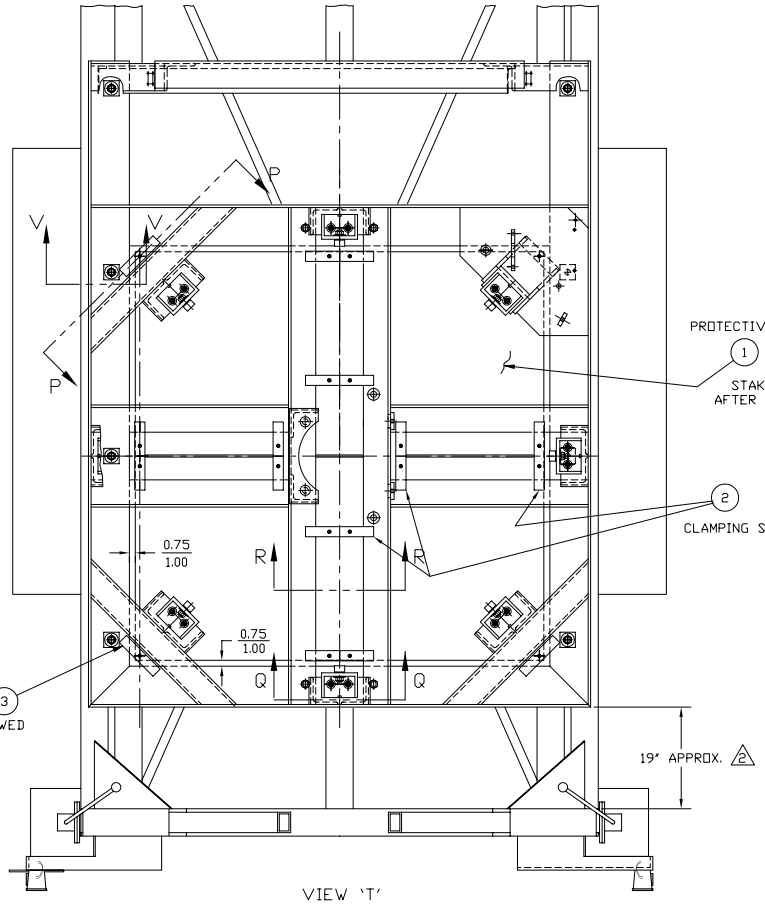
MF	ZONE	REV	DESCRIPTION	DATE	APPROVED
			REL TO PRODUCTION	21AUG89	FFR
		C	ADDED 3.9M REF TO DWG TITLE. ECM D034.34 CLASS C.	29SEP03	DD, JL BL
		E	ADD STEP 2 CALLOUT & REF. DIM 19" ADD IT. 11 & 12 (SECTION Q-Q). ECM D036.81 CLASS B	5MAR04	JD, RF DAT



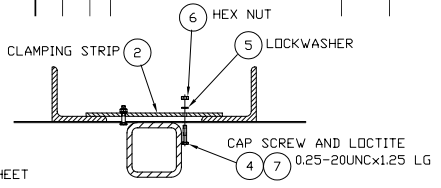
VIEW 'S'



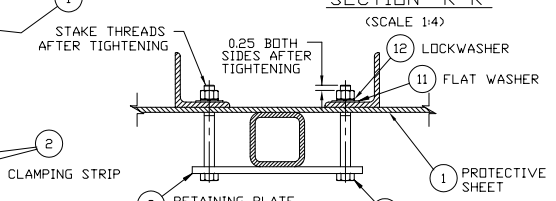
SECTION "P-P"
ROTATED 45°
(SCALE 1:4)
TYP-4 PLACES



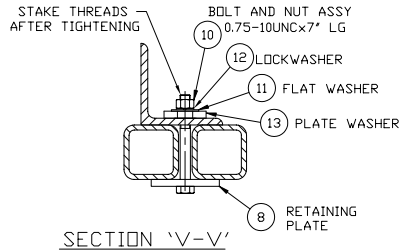
VIEW 'T'
ROTATED 90°



SECTION "R-R"
(SCALE 1:4)



SECTION "Q-Q"
(SCALE 1:4)
TYP 2 PLACES



SECTION 'V-V'
(SCALE 1:4)
TYP 8 PLACES

PARTS LIST

QTY	ITEM NO	U OF M	ANDREW PART NO.	DESCRIPTION

MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
1 PLACE DECIMALS ± .1
2 PLACE DECIMALS ± .03
3 PLACE DECIMALS ± .010
ANGLE ± 0.5°
ALL SURFACES
COML TOL APPLY TO STOCK SIZES
SIMILAR TO
SUPERSEDES DWG OF

MATERIAL
FINISH

DRAWN	ROLLINS	31MAY89
CHECKED	RWK	17AUG89
APPD ENGRG	MR	17AUG89
APPD ENGRG	----	----
APPD MFG	----	----
APPD Q.C.		

ANDREW CORPORATION
2701 Mayhill Road
Denton, Texas U.S.A. 76208

3.7/3.9/4.5/4.6M TRANSPORTABLE ESA POSITIONER/TRAILER INSTALLATION INSTRUCTIONS

SIZE D | FSCM NO. 84147 | DWG. NO. 239331
SCALE 1=8 | SHEET 2
PROD. GR 628 | DISTR A

220190
NEXT ASSY | USED ON
APPLICATION

CAD FILE NO: 239331.2.E

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1982

4. GENERAL

READ THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY. FOLLOW THE SEQUENCES FOR PROPER ASSEMBLY AND OPERATION.

CAUTION: THIS WARNING INDICATES THAT FAILURE TO FOLLOW THE PROPER PROCEDURE AT THIS POINT COULD RESULT IN DAMAGE TO THE ANTENNA AND/OR OTHER PROPERTY AND POSSIBLE INJURY TO PERSONNEL.

NOTICE
THIS INDICATES INFORMATION THAT SHOULD BE READ BEFORE PROCEEDING.

UNPACKING

CAREFULLY REMOVE ALL PARTS FROM SHIPPING BOXES. THE CONTENTS SHOULD CORRESPOND WITH THE PARTS LIST. ANY DAMAGE OR SHORTAGE WILL PREVENT SATISFACTORY ASSEMBLY, INSTALLATION, AND OPERATION OF THE ANTENNA.

NOTICE
"THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES."

5. TOOLS RECOMMENDED FOR PROPER INSTALLATION

QTY	DESCRIPTION
1	CRANE (2 TON MIN. CAPACITY)
4	8' LONG NYLON SLING (EYE AND EYE TYPE)
4	5/8 ANCHOR SHACKLE
2	3/4 OPEN END OR COMBINATION WRENCH
2	1 1/4 OPEN END OR COMBINATION WRENCH
1	ELECTRIC DRILL
1	9/16 DRILL BIT

NOTICE
APPLY LOCTITE TO ALL THREADED HARDWARE PRIOR TO FINAL TIGHTENING UNLESS OTHERWISE SPECIFIED

6. CAUTION USE SPREADER OR 8' LONG SLINGS TO ENSURE THAT SLINGS ARE IN LINE WITH LIFTING POSTS TO REDUCE SIDE LOAD ON REFLECTOR SKIN.

STEP 1:
INSTALL CONNECTING HARDWARE (0.75UNC BOLTS, WASHERS, SPHERICAL WASHERS AND NUTS) AS SHOWN IN SECTION "B-B". TIGHTEN HARDWARE WITH LOCTITE APPLIED.

STEP 2:
THRU EXISTING Ø0.625 HOLES IN THE TWO BRACKETS OF THE POSITIONER FRAME, DRILL Ø0.562 HOLES THRU THE REFLECTOR MOUNTING RING, USING DRILL BIT SUPPLIED. INSTALL CONNECTING HARDWARE (THREADED ROD, WASHERS AND NUTS) AS SHOWN IN SECTION "C-C". TIGHTEN NUTS WITH LOCTITE APPLIED. TIGHTEN NUTS ONLY ENOUGH TO FIX POSITION ACHIEVED UPON COMPLETION OF STEP 1. CARE SHOULD BE TAKEN TO AVOID DISTORTION OF REFLECTOR MOUNTING RING.

STEP 3:
REMOVE AND STORE (4) LIFTING POSTS AND ASSOCIATED HARDWARE FOR POSSIBLE FUTURE USE.

7 USE A COMBINATION OF 1, 2, OR 3 SHIMS (ITEMS 14, 15, 16) TO ENSURE THERE IS NO INTERFERNCE BETWEEN THE REFLECTOR STABILIZER & THE CROSS BAR OF THE POSITIONER.

DWG NO. 239343 SH 1

REVISIONS

MF	ZONE	REV	DESCRIPTION	DATE	APPROVED
			REL TO PRODUCTION	21AUG89	FFR
		A	REVISED SHEET 2; ADDED 3.7M TO TITLE. DCN 352.25(A)	5FEB90	TSK,WF
		B	ADDED IT'S. 12-16. IT.3 WAS QTY. 3. REVISED SHT. 2 AND ADDED NOTE 1. DCN D008.58(A2)	2MAR95	SLT,SJA KLP,PTP
		C	ADDED 3.9M REF TO DWG TITLE. ECM D034.34 CLASS C.	29SEP03	BL DD, JL

ITEM NO	QTY	U OF M	ANDREW PART NO.	PART OF:	DESCRIPTION
1	16	EA	46560-5	221030	2x2x7/8 SHIM
1	15	EA	46560-4		2x2x1/2 SHIM
1	14	EA	46560-3		2x2x3/8 SHIM
2	13	EA	9999-121		0.75-10 HEX NUT
1	12	EA	300807		0.75-10 STUD
1	11	EA	221039		0.562 DRILL BIT
6	10	EA	36165-22		LOCTITE
4	9	EA	9997-154		0.50 FLATWASHER
4	8	EA	9974-64		0.50 LOCKWASHER
8	7	EA	9999-61		0.50-13UNC-2B HEX NUT
2	6	EA	9934-179		0.50-13UNC-2Ax4.50LG THREADED ROD
6	5	EA	205936		CONVEX WASHER
6	4	EA	9997-232		1.00 FLATWASHER
4	3	EA	9974-10		0.75 LOCKWASHER
6	2	EA	9997-202		0.75 FLATWASHER
2	1	EA	45980-34	221030	0.75-10UNCx6.0LG BOLT & NUT ASSEMBLY

PARTS LIST

MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

CAD FILE NO: 239343.1.C

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
1 PLACE DECIMALS ± .1
2 PLACE DECIMALS ± .03
3 PLACE DECIMALS ± .010
ANGLE ± 0.5°
ALL SURFACES
COML TOL APPLY TO STOCK SIZES
SIMILAR TO
SUPERSEDES DWG OF

MATERIAL
FINISH

DRAWN	J F M	21AUG89
CHECKED	KGJ	21AUG89
APPD ENGRG	MR	18AUG89
APPD ENGRG	RWK	21AUG89
APPD MFG	----	-----
APPD Q.C.		

ANDREW CORPORATION
2701 Wayhill Road
Denton, Texas U.S.A. 76208

3.7/3.9/4.5M ESA TRANSPORTABLE REFLECTOR/POSITIONER INTERFACE INSTALLATION INSTRUCTIONS

SIZE D | FSCM NO. 84147 | DWG. NO. 239343
SCALE 1:1 | SHEET 1 of 2
PROD. GR 6218 | DISTR A

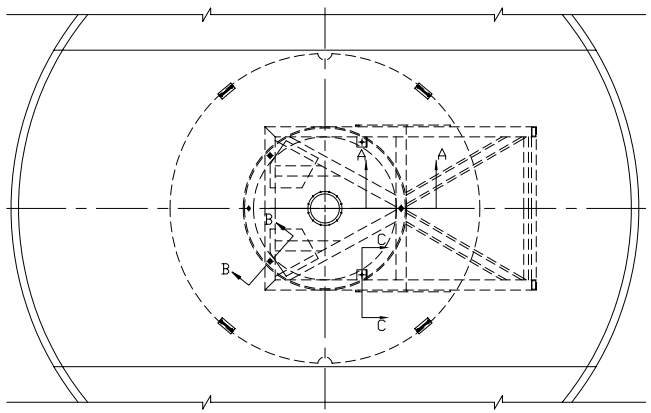
8 7 6 5 4 3 2 1

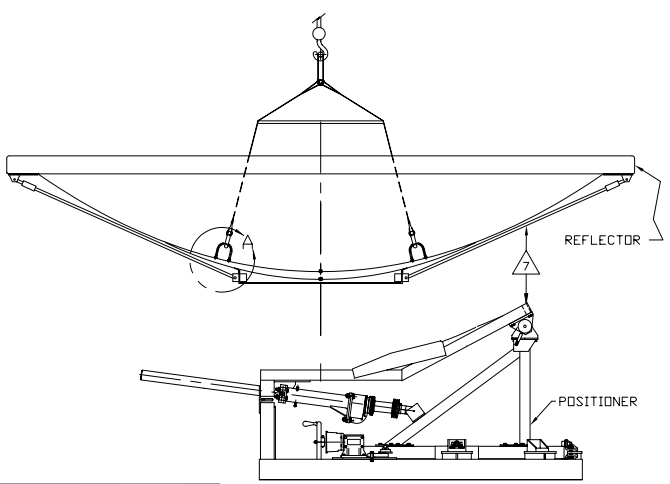
DWG NO. 239343 SH 2

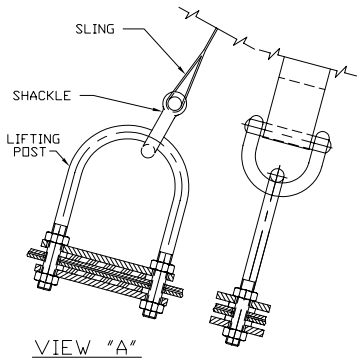
NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET DRAWING PER ANSI Y14.5M-1982

REVISIONS

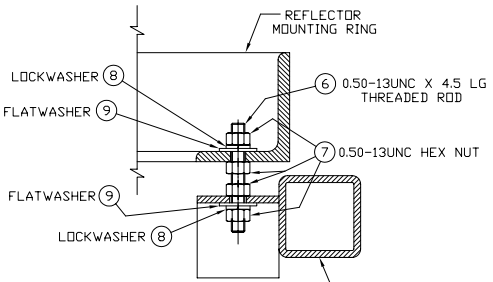
MF	ZONE	REV	DESCRIPTION	DATE	APPROVED
			REL TO PRODUCTION	21AUG89	FFR
		A	ADDED 3.7M TO TITLE AND ADDED NOTICE. DCN 352.25(A)	5FEB90	TSK,RWK
		B	ADDED SECTION A-A. SECTION B-B WAS TYP. 3 PLCS. DCN D008.58(A2)	2	SJA KLP,SLI
		C	ADDED 3.9M REF TO DWG TITLE. ECM D034.34 CLASS C.	29SEP03	BL DD, JL



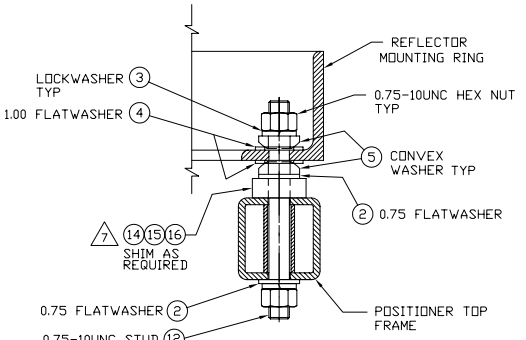




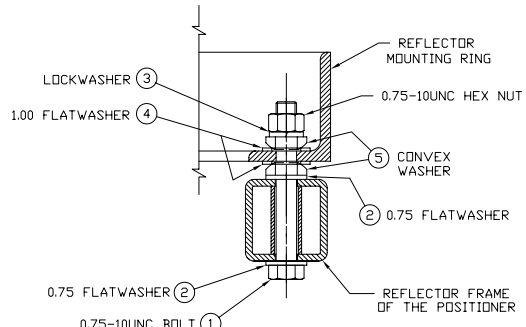
VIEW "A"
(SCALE 1:2)
TYPICAL-4 PLACES



SECTION "C-C"
(SCALE 1:2)
TYPICAL-2 PLACES
(ROTATED)



SECTION "A-A"
(SCALE 1:2)



SECTION "B-B"
(SCALE 1:2)
TYPICAL-2 PLACES

NOTICE
4.5M TRANSPORTABLE
REFLECTOR SHOWN

PARTS LIST

QTY	ITEM NO	U OF M	ANDREW PART NO.	DESCRIPTION

MFG PROCESSES	INSPECTION PROCEDURES	TEST PROCEDURES
AUSA SPECIFICATIONS		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
1 PLACE DECIMALS ± .1
2 PLACE DECIMALS ± .03
3 PLACE DECIMALS ± .010
ANGLE ± 0.5°
ALL SURFACES
CONT. TOL APPLY TO STOCK SIZES
SIMILAR TO
SUPERSEDES DWG OF

MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION

DRAWN	JFM	14JUL89
CHECKED	KGJ	21AUG89
APPD ENGRG	MR	18AUG89
APPD ENGRG	RWK	21AUG89
APPD MFG	-----	-----
APPD Q.C.		

ANDREW CORPORATION
2701 Maghill Road
Denton, Texas U.S.A. 76208

3.7/3.9/4.5M ESA TRANSPORTABLE REFLECTOR/POSITIONER INTERFACE INSTALLATION INSTRUCTIONS

SIZE D | FSCM NO. 84147 | DWG. NO. 239343
SCALE 1:16 | SHEET 2
PROD. GR 6|2|8 | DISTR A

CAD FILE NO: 239343.2.C

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

NOTES:(UNLESS OTHERWISE SPECIFIED)
1. REMOVE BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET PER ANSI Y14.5M–1994

GENERAL

READ THE INSTRUCTIONS THOROUGHLY BEFORE ASSEMBLY. FOLLOW THE SEQUENCES FOR PROPER ASSEMBLY AND OPERATION.

CAUTION: THIS WARNING INDICATES THAT FAILURE TO FOLLOW THE PROPER PROCEDURE AT THIS POINT COULD RESULT IN DAMAGE TO THE ANTENNA AND/OR OTHER PROPERTY AND POSSIBLE INJURY TO PERSONNEL.

NOTICE

THIS INDICATES INFORMATION THAT SHOULD BE READ BEFORE PROCEEDING.

UNPACKING

CAREFULLY REMOVE ALL PARTS FROM SHIPPING BOXES. THE CONTENTS SHOULD CORRESPOND WITH THE PARTS LIST. ANY DAMAGE OR SHORTAGE WILL PREVENT SATISFACTORY ASSEMBLY, INSTALLATION, AND OPERATION OF THE ANTENNA.

NOTICE

'THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.'

TOOLS RECOMMENDED FOR PROPER INSTALLATION

QTY	DESCRIPTION
1	DIAGONAL CUTTERS
2	7/16 OPEN END OR COMBINATION WRENCH
2	9/16 OPEN END OR COMBINATION WRENCH
2	3/4 OPEN END OR COMBINATION WRENCH
2	15/16 OPEN END OR COMBINATION WRENCH

NOTICE

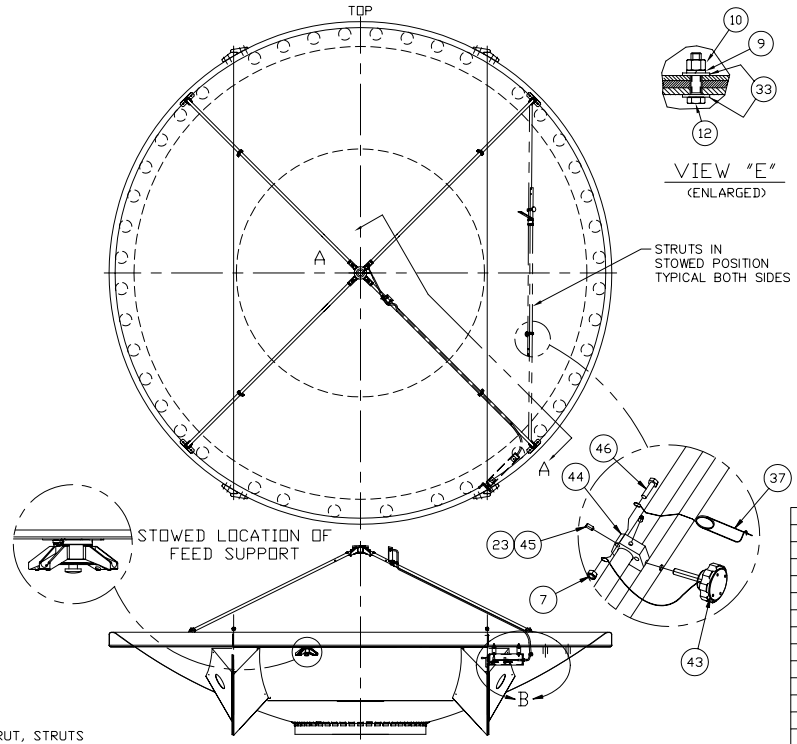
APPLY LOCTITE TO ALL THREADED HARDWARE PRIOR TO FINAL TIGHTENING UNLESS OTHERWISE SPECIFIED

STEP 1:
INSTALL FEED CLEVIS, CLEVIS PLATE. CLEVIS SUB STRUT, STRUTS AND FEED SUPPORT. TIGHTEN THE FEED SUPPORT HARDWARE SUCH THAT THE FEED STRUTS ARE COLLAPSED ONTO THE FEED SUPPORT RODS.

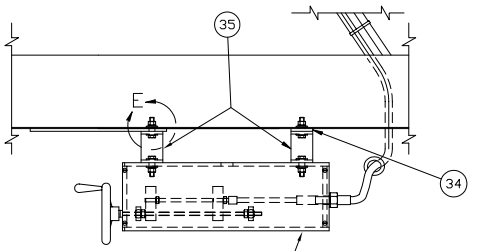
STEP 2:
LOOSELY INSTALL THE POLARIZATION HOUSING ASSEMBLY. ADJUST THE PUSH-PULL CABLE UNTIL IT IS FULLY EXTENDED. ROTATE THE FEED SUPPORT AWAY FROM THE PUSH-PULL CABLE UNTIL THE CLEVIS CLEARS THE FEED SUPPORT BY 0.06(1.5mm). ADJUST THE SUPPORT BRACKET AND PUSH-PULL CABLE TO MAINTAIN THE 0.06 CLEARANCE AS WELL AS TO KEEP THE CABLE END MOVING IN A PLANE PERPENDICULAR TO THE FEED HORN'S AXIS.

STEP 3:
INSTALL ABSORBER, VERTEX PLATE AND RETAINING BAR AS SHOWN IN VIEW "F".

STEP 4:
CAUTION TIGHTEN ALL REMAINING HARDWARE. CHECK THE OPERATION OF POLARIZATION DRIVE BY ROTATING THE HAND WHEEL OF THE POLARIZATION HOUSING ASSEMBLY FROM ONE EXTREME TO ANOTHER IN BOTH DIRECTIONS. ROTATION SHOULD BE SMOOTH WITHOUT BINDING.



VIEW "E"
(ENLARGED)



VIEW "B"
(ENLARGED)

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
	REL TO PRODUCTION	21AUG89	FFR
A	REVISED ITEM 9 AND 10 PICTORIALLY, IN VIEW B REV SCREW HEADS TO HIDDEN (QTY 4) IT. 16 P/N WAS 220896: DCN 350.75 (B)	29NOV89	TMM,WF
B	SEE ECM FOR CHANGES D034.56 (C)	20OCT03	JESS J.D. , RF

ITEM NO.	QTY	UNIT OF MEAS.	ANDREW PART NO.		DESCRIPTION
1	27	EA	49929-2	209100	ABSORBER
1	26	EA	49964-2		VERTEX PLATE
1	25	EA	49997		RETAINING BAR
5	24	EA	44044		CABLE TIE
9	23	EA	36165-22		LOCTITE
8	22	EA	9963-186		0.50-13UNC-2Ax1.50LG HHCS
8	21	EA	9999-61		0.50-13UNC-2B HEX NUT
8	20	EA	9974-64		0.50 LOCKWASHER
16	19	EA	9997-154		0.50 FLATWASHER
1	18	EA	302954		CLEVIS SUB STRUT
1	17	EA	302963		CLEVIS PLATE
1	16	EA	220886		CLEVIS
1	15	EA	9999-86		0.25-28UNF-2B HEX NUT
1	14	EA	12053-25		GROMMET
4	13	EA	9858-38		SHOULDER BOLT,3/8" X 1 3/4" LG. 18-8 SST
2	12	EA	9963-181		0.375-16UNC-2Ax1.50LG HHCS
8	11	EA	9963-128		0.375-16UNC-2Ax1.75LG HHCS
10	10	EA	9999-60		0.375-16UNC-2B HEX NUT
14	9	EA	9974-63		0.375 LOCKWASHER
1	8	EA	303569		CLEVIS PIN
8	7	EA	9979-11		0.25-20UNC HEX NUT
4	6	EA	9979-7		NUT, NYLOK 5/16
2	5	EA	9956-114		U-BOLT
1	4	EA	220736		SUPPORT BRACKET
1	3	EA	303523		FEED SUPPORTASSEMBLY
1	2	EA	220938		POL. DRIVE HOUSING ASSY
4	1	EA	303565	209100	FEED STRUT

PARTS LIST

ITEM NO.	QTY	UNIT OF MEAS.	ANDREW PART NO.		DESCRIPTION
4	46	EA	9963-76	209100	SCREW,HH 1/4-20x 1.5
4	45	EA	9978-103		HDLESS SET SCREW
4	44	EA	302965		STRUT CLAMP
4	43	EA	302956		KNOB WITH GROOVE
4	42	EA	302958		WASHER, THRUST
8	41	EA	302979		WASHER, TEFLON
4	40	EA	9979-8		NUT, LK HEX, 3/8-16
4	39	EA	9858-19		BOLT SDR 3/8-16, .5"
4	38	EA	302957		BUSHING
2	37	EA	303054		SAFETY PIN
8	36	EA	9997-79		WASHER, FLAT 3/8
2	35	EA	300549		POL. DRIVE MTG BKT.
2	34	EA	209765-1		SPACER
2	33	EA	9997-144		WASHER, FLAT 3/8
1	32	EA	9997-42		0.25 FLATWASHER
6	31	EA	9999-93		0.25-20UNC-2B HEX NUT
6	30	EA	9989-45		0.25-20UNC-2Ax1.5LG NYLON SCR
12	29	EA	9862-2		0.25 NYLON WASHER
1	28	EA	9989-16	209100	0.25-20UNC-2Ax1.00LG RD HD SCR

MATERIAL
FINISH
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES
1 PLACE DECIMALS ±0.1
2 PLACE DECIMALS ±0.03
3 PLACE DECIMALS ±0.010
ANGLES ±
ALL SURFACES √

DRAWN BY	JFM	18JUL89
APPD ENG	MR	24JUL89
APPD MFG	RWK	24JUL89
APPD QA		
APPD	KGJ	24JUL89
SUPERSEDES		
USED ON		

ANDREW® ANDREW CANADA INC. WHITBY, ONTARIO CANADA

4.5M TRANSPORTABLE ESA MANUAL POLARIZATION DRIVE WITH STRUTS INSTALLATION INSTRUCTIONS

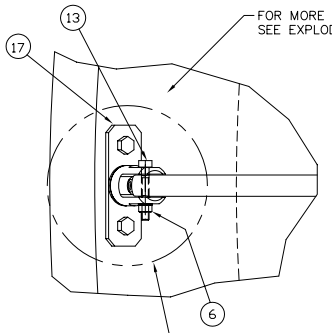
SIZE D | CAGE CODE 35844 | DOCUMENT NO. 239351

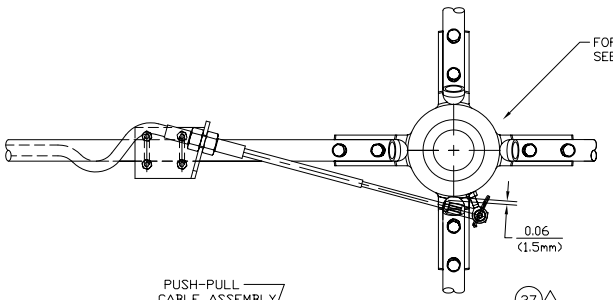
CAD NO.2.39351.1.B | SCALE 1=1 | SHEET 1 of 3

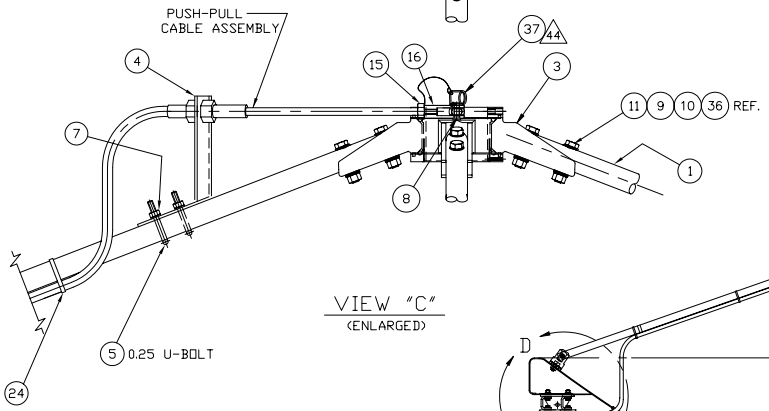
NOTICE: These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew.

NOTES:(UNLESS OTHERWISE SPECIFIED)
1. REMOVE BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET PER ANSI Y14.5M-1994

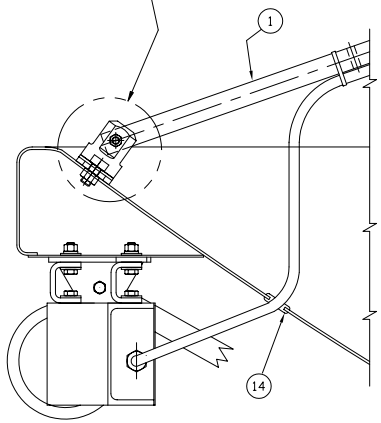
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
	RELEASE TO PRODUCTION	21AUG89	FFR
A	IN VIEW D & VIEW D CALLOUT ROTATED CHANNEL 180°, DCN 350.75 B	29NOV89	TMM,WF
B	SEE ECM FOR CHANGES D034.56 (C)	20OCT03	JESS J.D. RF



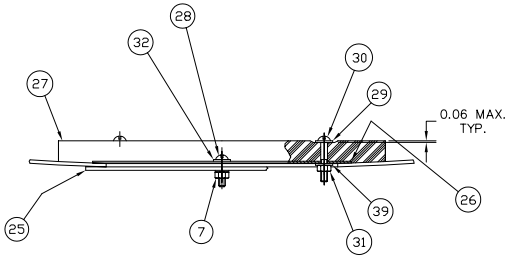




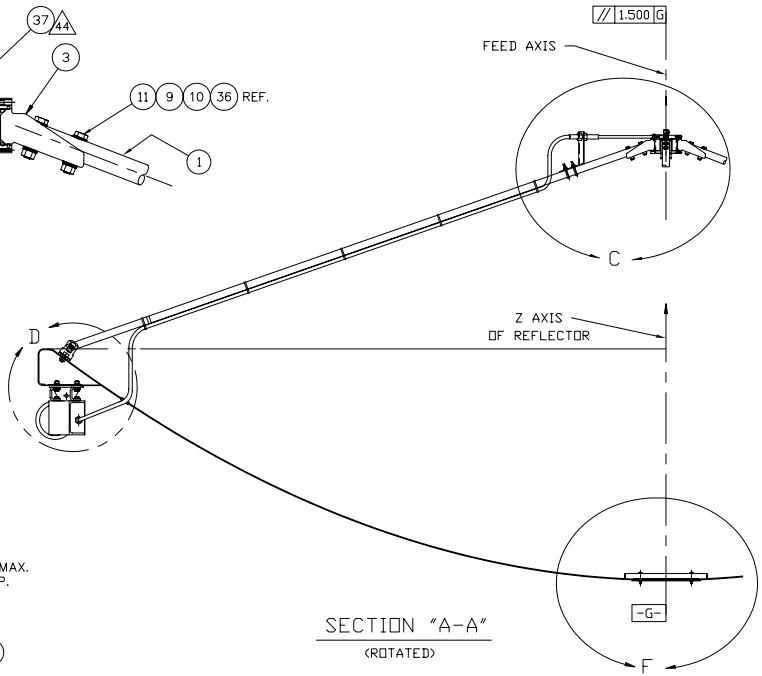
VIEW "C"
(ENLARGED)



VIEW "D"
(ENLARGED)



VIEW "F"
(ENLARGED)



SECTION "A-A"
(ROTATED)

QTY	ITEM NO.	UN of MEAS	ANDREW PART NO.	DESCRIPTION

PARTS LIST

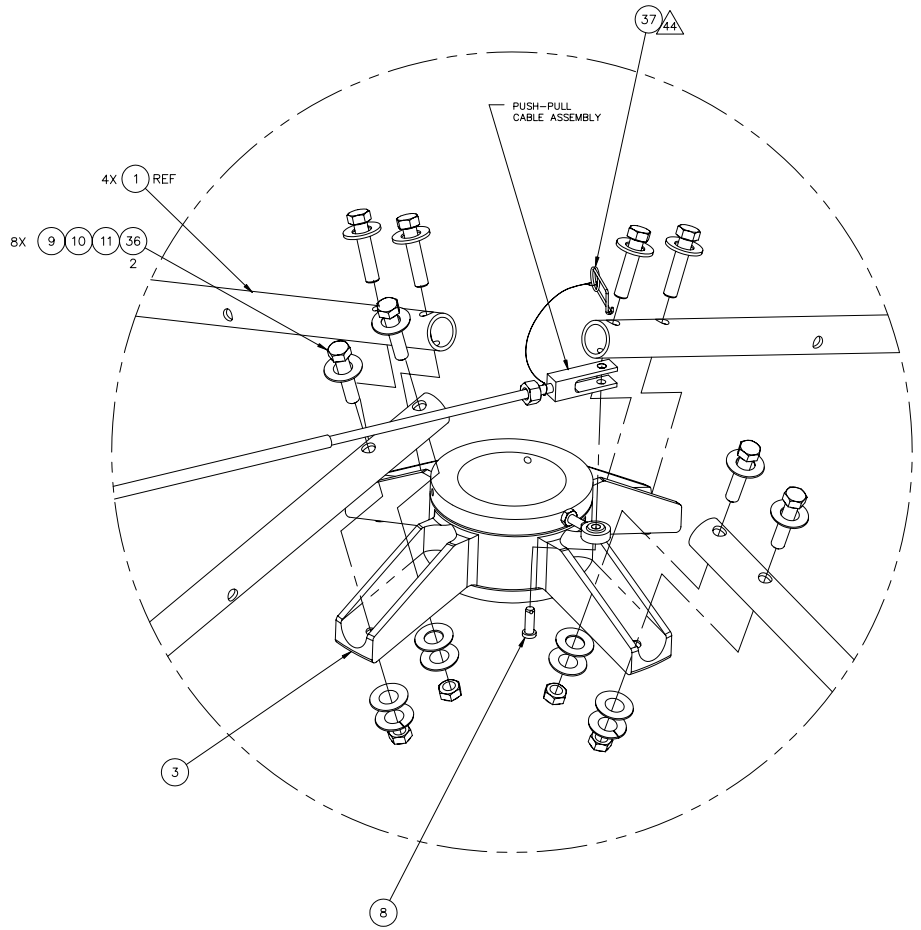
MATERIAL	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			ANDREW® ANDREW CANADA INC. WHITBY, ONTARIO CANADA
	TOLERANCES	DRAWN BY	JFM 20JUL89	4.5M TRANSPORTABLE ESA MANUAL POLARIZATION DRIVE WITH STRUTS INSTALLATION INSTRUCTIONS
	1 PLACE DECIMALS ±0.1	APPD ENG	MR 24JUL89	
	2 PLACE DECIMALS ±0.03	APPD MFG	RWK 24JUL89	
FINISH	3 PLACE DECIMALS ±0.010	APPD QA		
	ANGLES ±	APPD	KGJ 24JUL89	
	ALL SURFACES √	SUPERSEDES		SIZE D CAGE CODE 35844 DOCUMENT NO. 239351
		USED ON		

NOTICE: These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew.

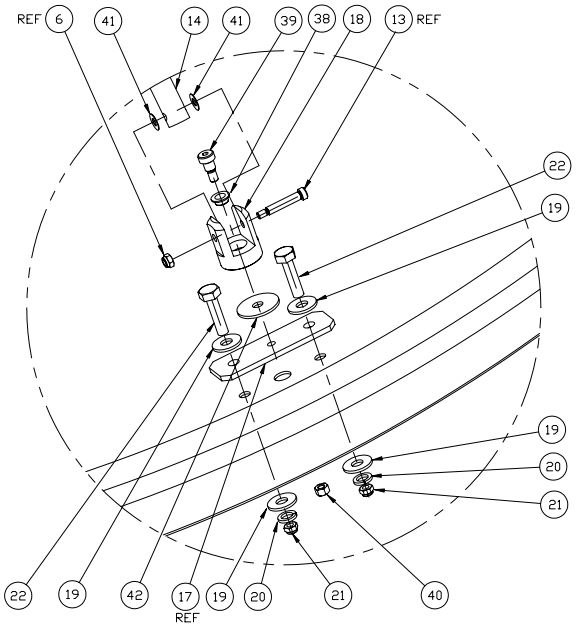
CAD NO.239351.2.B SCALE 1=1 SHEET 2 of 3

NOTES:(UNLESS OTHERWISE SPECIFIED)
1. REMOVE BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET PER ANSI Y14.5M–1994

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
B	RELEASE TO PRODUCTION ECM D034.56 (C)	20OCT03	JESS, RF



EXPLODED DETAIL
FEED SUPPORT



EXPLODED DETAIL
CLEVIS PIVOT

QTY	ITEM NO.	UN of MEAS	ANDREW PART NO.	DESCRIPTION

PARTS LIST

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES
1 PLACE DECIMALS ±0.1
2 PLACE DECIMALS ±0.03
3 PLACE DECIMALS ±0.010
ANGLES ±
ALL SURFACES ✓

DRAWN BY	JESS	07FEB03
APPD ENG		
APPD MFG	J.DEAN	31OCT03
APPD QA	R.FRANCO	31OCT03
APPD	N.M.	29OCT03
SUPERSEDES		
USED ON		

NOTICE: These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew.

ANDREW®
ANDREW CANADA INC.
WHITBY, ONTARIO CANADA

4.5M TRANSPORTABLE ESA
MANUAL POLARIZATION DRIVE
WITH STRUTS
INSTALLATION INSTRUCTIONS

SIZE	CAGE CODE	DOCUMENT NO.
D	35844	238351

CAD NO.238351.3.B | SCALE 1:10 | SHEET 3 of 3

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. REMOVE ALL BURRS AND SHARP EDGES.
2. DIMENSIONS APPLY BEFORE PLATING.
3. INTERPRET DRAWING PER ANSI Y14.5M-1982.
4. DEFINITION OF ABBREVIATION USED:
   "AZ M" DENOTES AZIMUTH MOTOR.
   "EL M" DENOTES ELEVATION MOTOR.
   "FRM" DENOTES MOTOR FRAME.
   "COM" DENOTES COMMON.
   "GND" DENOTES GROUND.
5. DO NOT FASTEN CABLE TIES
   UNTIL ALL CABLES ARE INSTALLED AND ROUTED FROM THE MOTOR, LIMIT SWITCH, REMOTE CONTROL AND POLARIZATION DRIVE INSTALLATION.
   SEE LIMIT SWITCH INSTALLATION (AE01E-D0212) FOR FINAL CABLE ROUTING AND THE INSTALLATION OF CABLE TIES.
6. CABLE ROUTING SHOULD BE DONE IN SUCH A MANNER THAT THE CABLES ARE SUPPORTED WITHIN 12 INCHES FROM EACH CORD GRIP CONNECTOR AND THERE AFTER BE SUPPORTED EVERY 4 1/2 FEET MAXIMUM USING THE SUPPLIED MOUNTING HARDWARE.
7. TO INSTALL THE CRIMP TERMINALS, USE PANDUIT CT-500 CRIMP TOOL OR EQUIVALENT.
8. TO INSTALL THE CRIMP AMPHENOL RECEPTACLE WITH SOCKET, USE AMPHENOL CRIMP TOOL P/N 347-100, LOCATOR P/N 357-300-02, AND INSERTER BIT P/N 356-400-1 WITH HANDLE P/N 356-200 OR EQUIVALENT.
9. "DANGER" EQUIPMENT IS AT LINE VOLTAGE WHEN AC POWER IS CONNECTED TO THE LOCAL MOTOR CONTROLLER. ALL UNGROUNDED CONDUCTORS OF AC POWER LINE MUST BE DISCONNECTED FROM THE CONTROLLER BEFORE IT IS SAFE TO TOUCH ANY INTERNAL PARTS OF THIS EQUIPMENT. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN FATAL INJURY.
10. "WARNING" THIS EQUIPMENT SHOULD BE ADJUSTED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE EQUIPMENT AND THE HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.
11. BE SURE TO WEAR SAFETY GLASSES AT ALL TIMES WHEN PERFORMING MAINTENANCE.
12. BE SURE THE INPUT DISCONNECT IS IN THE CORRECT POSITION, EITHER 'ON' OR 'OFF' DEPENDING ON THE WORK TO BE PERFORMED.
13. "CAUTION" THE ANTENNA SHOULD BE DEPLOYED WITH FULL VISIBILITY OF THE AREA ABOVE AND AROUND THE ANTENNA.
14. ADDITIONAL NOTES ARE ON EACH SHEET OF THIS INSTALLATION, FOLLOW THESE NOTES FOR DETAIL INSTALLATION INSTRUCTIONS.
15. TESTING MOTORS:
    DEFINITION: THE REFLECTOR , WHEN IN THE STOW POSITION (LOCATED ON THE STOW FRAME) IS IN THE FULL UP POSITION IN THE ESA WORLD (90 DEGREES ON THE ELEVATION DIAL) AND FACING SOUTH. TO MOVE THE REFLECTOR OFF THE STOW FRAME AND TO A SATELLITE YOU MUST FIRST MOVE IN "ELEVATION" AXIS IN THE "DOWN" DIRECTION. YOU CAN NOT MOVE IN AZIMUTH OFF THE STOW FRAME. THE LIMITS SWITCHES WILL BE SET TO PREVENT AZIMUTH MOVEMENT OFF THE STOW FRAME FOR SEVERAL DEGREES.

    THE AZIMUTH MOVEMENT BY DIRECTION IS WITH THE REFLECTOR FACING SOUTH AND TO MOVE EAST WILL MOVETO THE LEFT, COUNTER CLOCKWISE, AND TO MOVE WEST WILL MOVE TO THE RIGHT, CLOCKWISE.
16. HOOK-UP THE MOTORS:
    "WARNING" THESE MOTORS ARE ALL THREE PHASE AND CAN RUN IN EITHER DIRECTION WHEN HOOKED UP; THEREFORE, REWIRING THE MOTOR AT THE TB1 TERMINAL AS REQUIRED.

    "CAUTION" DURING THE INITIAL CHECKOUT OF THE AC WIRING TO THE MOTORS, CARE MUST BE TAKEN NOT TO EXCEED THE SYSTEM TRAVEL LIMITS.
    THE LIMIT SWITCHES PROVIDED WILL NOT FUNCTION PROPERLY IF THE REFLECTOR MOVEMENT IS OPPOSITE TO THE DESIRED MOVEMENT WHEN THE DIRECTION CONTROL SWITCHES ON THE MANUAL PORTABLE CONTROL BOX ARE USED.

    NOTICE

    TO AVOID POSSIBLE DAMAGE, MAKE SURE POSITIONER IS MANUALLY RAISED 6-8" ABOVE THE HARD STOW POSITION BEFORE TESTING MOTORS.

    A. VERIFY THAT THE REFLECTOR MOVEMENT IN ELEVATION AND AZIMUTH CORRESPONDS WITH THE APPROPRIATE DIRECTIONAL CONTROL SWITCHES ON THE MANUAL PORTABLE CONTROL BOX.

    B. IF THE REFLECTOR MOVEMENT IN BOTH ELEVATION AND AZIMUTH IS OPPOSITE TO THE DESIRED MOVEMENT, THEN MOVE THE RED WIRE FROM TB1-48 TO TB1-50 AND THE BLK WIRE FROM TB1-50 TO TB1-48.

    C. IF THE REFLECTOR MOVEMENT IN ELEVATION IS OPPOSITE TO THE DESIRED MOVEMENT, THEN MOVE THE RED WIRE FROM TB1-21 TO TB1-23 AND THE BLK WIRE FROM TB1-23 TO TB1-21.

    D. IF THE REFLECTOR MOVEMENT IN AZIMUTH IS OPPOSITE TO THE DESIRED MOVEMENT, THEN MOVE THE RED WIRE FROM TB1-28 TO TB1-30 AND THE BLK WIRE FROM TB1-30 TO TB1-28.

    E. REPEAT STEP "A" ABOVE IF ANY WIRING CHANGES HAVE BEEN DONE IN STEPS "A" THROUGH "D".
17. ONCE THE MOTORS ARE OPERATING IN THE CORRECT DIRECTIONS, THEN SET AND TEST ALL LIMITS SWITCHES PER INSTALLATION DRAWING "AE01E-D0212".
18. REMOVE VENDOR SUPPLIED MOTOR BRAKE WIRE.

SHEET	1	2	3	4
REV	F	F	-	E

DWG. NO. AE01E-D0253 SH 1

REVISIONS

MF	ZONE	REV.	DESCRIPTION	DATE	APPROVED
			REL TO PRODUCTION	9/29/89	EB
		A	SEE DCN P011.70(B)	10/11/89	EB
		B	SEE DCN P012.63	12/13/89	EB
		C	SEE DCN P0114.01 (A)	3/29/90	EB
		D	SEE DCN P016.08 (A)	9/24/90	RGG
		E	SEE DCN P018.79 (A)	7/29/91	RG
		F	ADDED NOTICE TO NOTE 16 -SHT 1; ADDED NOTICE TO NOTE 6 -SHT 2. DCN D010.70(B)		BLA

QTY	ITEM NO.	U OF M	ANDREW PART NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	REF. DESIGNATOR	NOTES
	DASH NO./DETAIL				PARTS LIST		
1	21	EA	AE01A-D0748		ASSY, EL MOT SUPPORT JACK		
1	20	EA	ECPLM-12200		CPLG,SHAFT,3/4 BORE		
2	19	EA	ECPLM-00100		CPLG, SPIDER		
1	18	EA	ECPLM-10200		CPLG,SHAFT,5/8 BORE		
2	17	EA	ECPLM-16200		CPLG,SHAFT,1 BORE		
2	16	EA	ECNNC-60105		CONN,CA,.431 DIA,1/2,90		
4	15	EA	9972-79		SHC,5/16-18 x1.0 LG,SST		
8	14	EA	ECLAT-22179		TIE,CABLE,WHTR,RES,BLK		
12	13	EA	ETERP-13130		TERMINAL,PIN,14 AWG		
12	12	EA	ETERR-13320		TERMINAL,RING,14 AWG,#10		
2	11	EA	ECONC-93024		SEALING RING,1/2 CONDUIT		
2	10	EA	ECONC-91101		LOCKNUT,CONDUIT FTG,1/2		
2	9	EA	ECLAT-41020		TIE,CABLE,FLAG,18 LBS		
2	8	EA	ECNNC-40105		CONN,CA,.500 DIA,1/2,STR		
38	7	FT	ECABM-60905		CABLE,6 COND,14 AWG,SDN	10.1/27.8	
8	6	EA	EWSHL-11070		WASHER,LOCK,#5/16,CRES		
4	5	EA	EWSHF-10705		WASHER,FLAT,#5/16 x .063,CRES		
4	4	EA	ENUTS-11080		NUT,HEX,5/16-18,SST		
4	3	EA	9972-27		SHC,5/16-16 x 1.25LG,CRES		
1	2	EA	EMOTG-31370		MOT,GR,4.6:1,2HP,W/BK	EL MOTOR	
1	1	EA	EMOTG-41420		MOT,GR,RT ANG,41:1,W/BK	AZ MOTOR	

THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be considered secret to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

	AE01K-D0250	ESA45AP
	NEXT ASSY.	USED ON
	APPLICATION	

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED, SEMI DIMENSIONED DWGS ARE IN MILLIMETERS [INCHES]. SINGLE DIMENSIONED DWGS ARE IN INCHES.

METRIC

TOL. ON METRIC DIM.: .X=±0.5, .XX=±0.2
HOLE DIAMETERS:
UNDER 6.350 = +0.13-0.13
6.35 TO 13.70 = +0.15-0.13
OVER 13.70 = +0.20-0.13
ANGLES ±0.5°
CONCENTRICITY BETWEEN DIA. ON A COMMON AXIS TO BE WITHIN 0.25 R.

US CUSTOMARY [ ]

TOL. ON [ ] DIM.: .X=±.2 .XX=±.02, .XXX=±.005
HOLE DIAMETERS
UNDER .2500 = +.005-.005
.2500 TO .2000 = +.006-.005
OVER .2500 = +.008-.005
ANGLES ±0.5°
CONCENTRICITY BETWEEN DIA. ON A COMMON AXIS TO BE WITHIN .010 R.

DRAWN	MCB	6/9/89
CHECKED	PAYNE	9/29/89
APPL. ENGRG.	EVANS	9/29/89
APPL. QC	MAST	9/29/89
APPL. MFG.	DURICIC	9/29/89

THIRD ANGLE PROJECTION

ANDREW CORPORATION
Electronic Technology Center
Richardson, TX U.S.A.

INSTALLATION, MOTOR DRIVE, 4.5M TRANSPORTABLE

SIZE	FSCM NO.	DWG. NO.	REV.
D	84147	AE01E-D0253	F

SCALE 1/1 | TEO8VK1F | SHEET 1 OF 4

PROD. GR. 628 | INSTR. P

25

NOTES:

1. SEE SHEET ONE FOR ADDITIONAL NOTES.
2. CUT ITEM 7, 6 CONDUCTOR 14 AWG CABLE, 27 FEET 10 INCHES FOR THE EL MOTOR INSTALLATION.
3. CUT ITEM 7, 6 CONDUCTOR 14 AWG CABLE, 10 FEET AND 1 INCH FOR THE AZ MOTOR INSTALLATION.
4. REFER TO INTERCONNECT DIAGRAM (AE01S-D0418) FOR HOOKUP INFORMATION.
5. FOR CABLE ROUTING BEYOND THIS POINT, FOLLOWING THE LIMIT SWITCH INSTALLATION, AE01E-D0212.
6. REMOVE HANDCRANKS, ENDPLATES AND SHAFT EXTENSIONS BEFORE INSTALLING MOTORS.

NOTICE

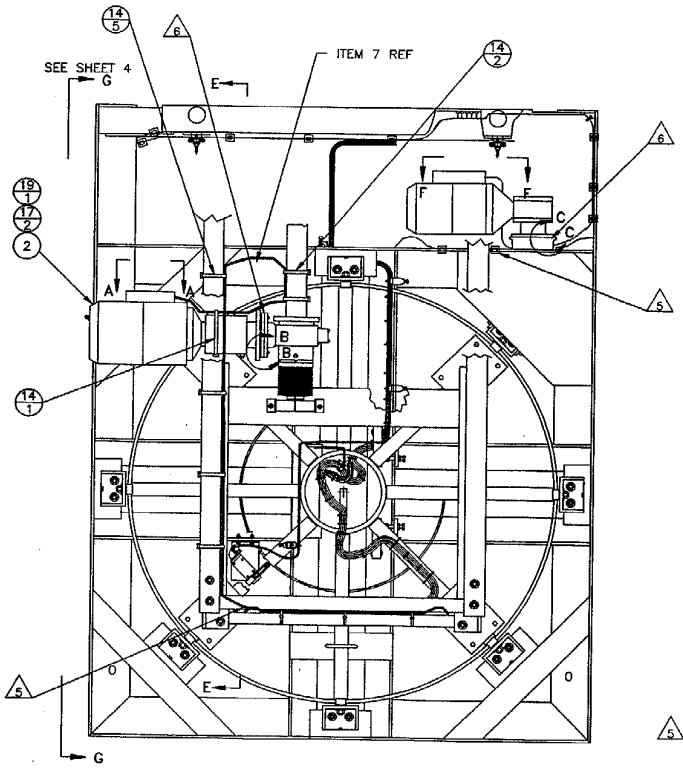
BEFORE REMOVING HAND CRANK, MANUALLY RAISE POSITIONER FROM STOW POSITION APPROX. 6-8".

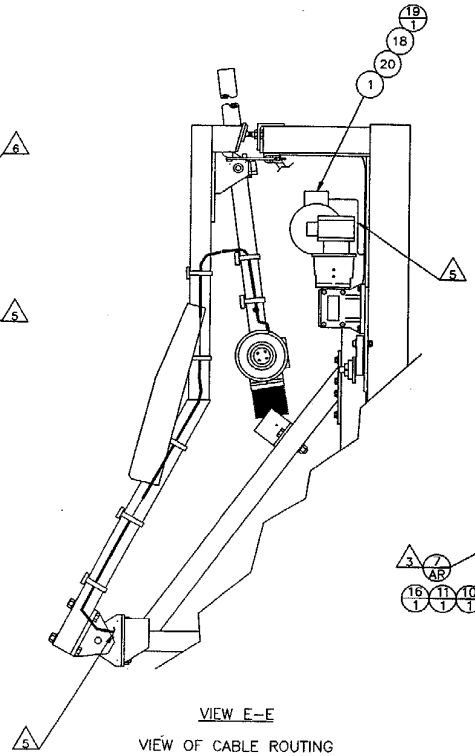
7. DO NOT FASTEN CABLE TIES UNTIL ALL CABLES ARE INSTALLED AND ROUTED FROM THE MOTOR, LIMIT SWITCH, REMOTE CONTROL AND POLARIZATION DRIVE INSTALLATION. SEE LIMIT SWITCH INSTALLATION FOR FINAL CABLE ROUTING AND THE INSTALLATION OF CABLE TIES.

DETAIL B-B
SCALE: NONE

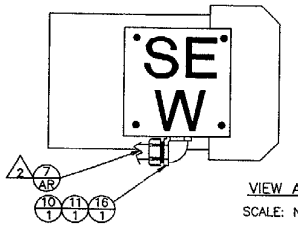
DETAIL C-C
SCALE: NONE

AZIMUTH MOTOR ELEVATION MOTOR			DRIVE MOTOR CONTROLLER BOX		TB1
EL MOTOR	T1	6 CONDUCTOR, 14 AWG, SDN CABLE	RED	14 AWG	21
	T2		BLK	14 AWG	22
	T3		BLU	14 AWG	23
	B2		YEL	14 AWG	35
	B3		BRN	14 AWG	36
	FRM		ORN	14 AWG	24
AZ MOTOR	T1	6 CONDUCTOR, 14 AWG, SDN CABLE	RED	14 AWG	28
	T2		BLK	14 AWG	29
	T3		BLU	14 AWG	30
	B2		YEL	14 AWG	55
	B3		BRN	14 AWG	56
	FRM		ORN	14 AWG	31

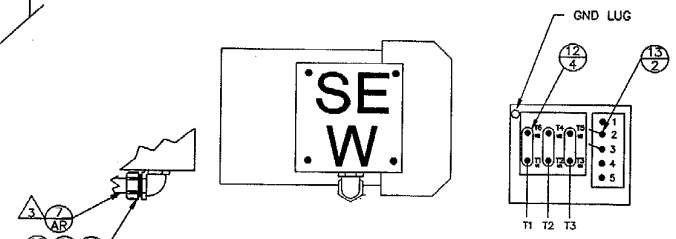




VIEW E-E
VIEW OF CABLE ROUTING



VIEW A-A
SCALE: NONE
ROTATED
FOR EL MOTOR



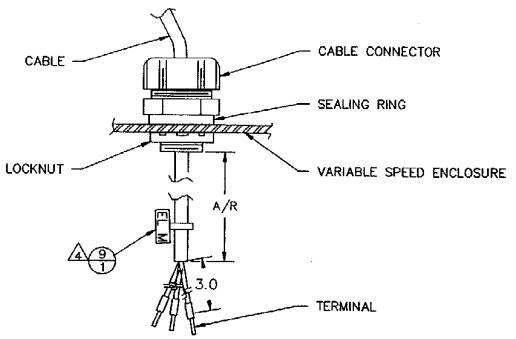
VIEW F-F
SCALE: NONE
ROTATED
FOR AZ MOTOR

AZIMUTH AND ELEVATION MOTOR INSTALLATION

PREP MCB	8/9/89	SIZE D	FSCM NO. 84147	DWG NO. AE01E-D0253 REV. F
CHK. RJP	9/23/89	SCALE 1/8	TE08VK2F	SHEET 2

NOTES:

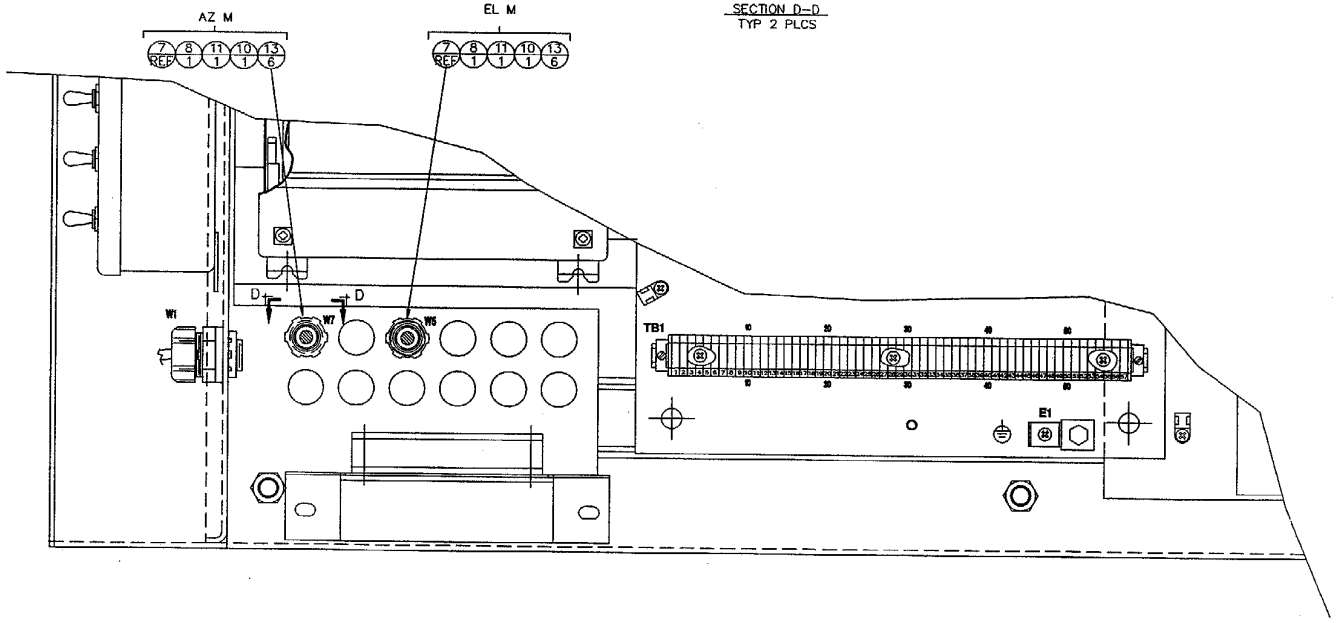
1. REMOVE 3 INCHES OF CABLE JACKET FROM CABLE, STRIP CONDUCTOR END .19 INCHES AND LOCATE CABLE IN CABLE CONNECTOR APPROXIMATELY AS SHOWN IN SECTION D–D.
   INSTALL TERMINALS AFTER THE CABLES HAVE BEEN FED THROUGH THE CABLE CONNECTORS.
2. REFER TO INTERCONNECT DIAGRAM AE01S–D0418 FOR HOOKUP INFORMATION.
3. CONTACTOR PLATE END ONLY.
4. MARK CABLE TIE (ITEM 9) PER WIRE LIST WITH PERMANENT INK. SEE SHEET 1 FOR DEFINITIONS OF THE ABBREVIATIONS USED.
5. SEE PARTS LIST FOR TERMINAL NUMBER AND DESCRIPTION.
6. SEE SHEET ONE FOR ADDITIONAL NOTES.



SECTION D–D
TYP 2 PLCS

WIRE LIST 3

CABLE NAME 4	CABLE NO. AND CNTOR BOX HOLE	WIRE COLOR	TERMINAL 5	TB1
EL M	W5	RED	31	21
		BLK	31	22
		BLU	31	23
		ORN	31	24
AZ M	W7	RED	31	28
		BLK	31	29
		BLU	31	30
		ORN	31	31



FRONT VIEW OF MOTOR DRIVE CONTROLLER ASSEMBLY

AZIMUTH AND ELEVATION MOTORS, WIRING AT CONTACTOR PLATE

PREP MCB 8/9/89	SIZE D	FSCM NO. 84147	DWG. NO. AE01E–D0253	REV
CHK.	SCALE NONE		TFORVK3 SHEET 3	

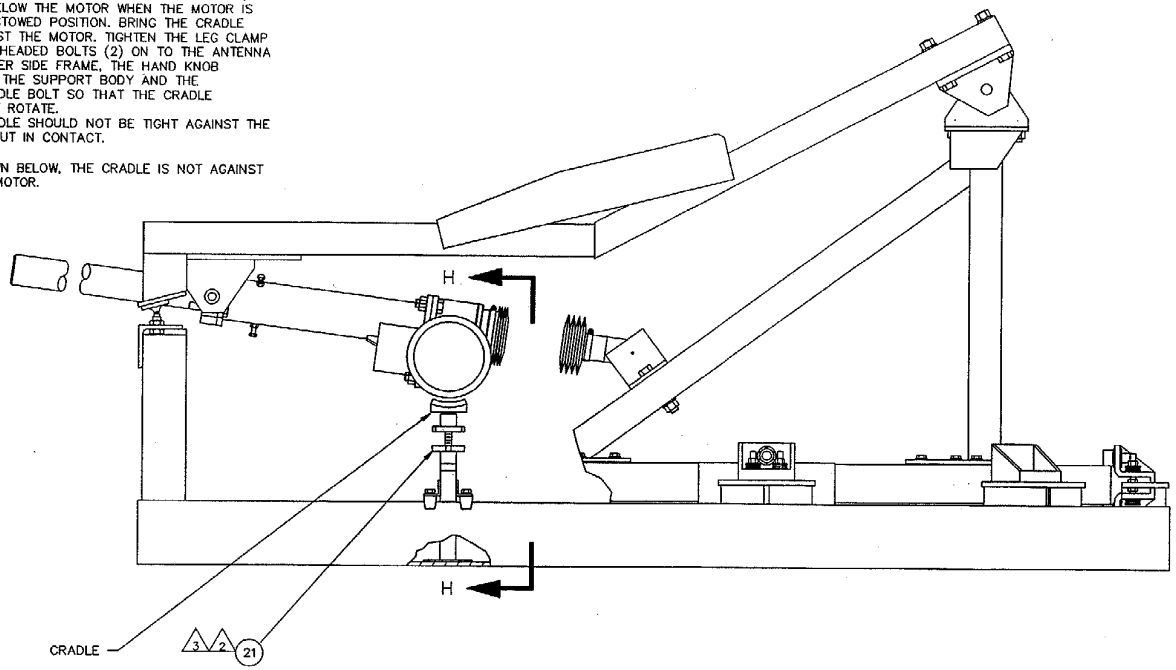
NOTES:

1. SEE SHEET ONE FOR ADDITIONALS NOTES.

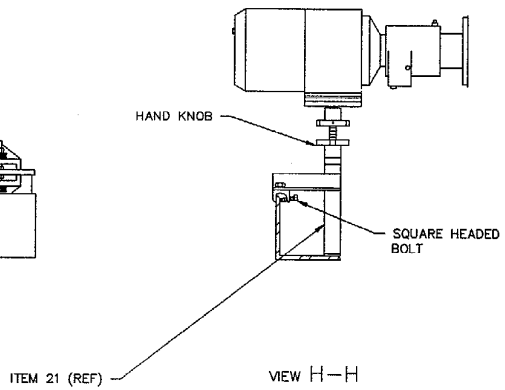
2. LOOSEN THE 1/4 BOLT THAT ATTACHES THE CRADLE TO THE THREAD ROD AND ALLOWS IT ROTATE. THIS BOLT IS LOCATED INSIDE THE RUBBER PAD.

3. LOCATE ITEM 21, ELEVATION MOTOR SUPPORT, RIGHT BELOW THE MOTOR WHEN THE MOTOR IS IN THE STOWED POSITION. BRING THE CRADLE UP AGINST THE MOTOR. TIGHTEN THE LEG CLAMP SQUARE HEADED BOLTS (2) ON TO THE ANTENNA POSITIONER SIDE FRAME, THE HAND KNOB AGAINST THE SUPPORT BODY AND THE 1/4 CRADLE BOLT SO THAT THE CRADLE WILL NOT ROTATE.
THE CRADLE SHOULD NOT BE TIGHT AGAINST THE MOTOR BUT IN CONTACT.

AS SHOWN BELOW, THE CRADLE IS NOT AGAINST THE EL MOTOR.



VIEW G–G
SCALE: 1/5



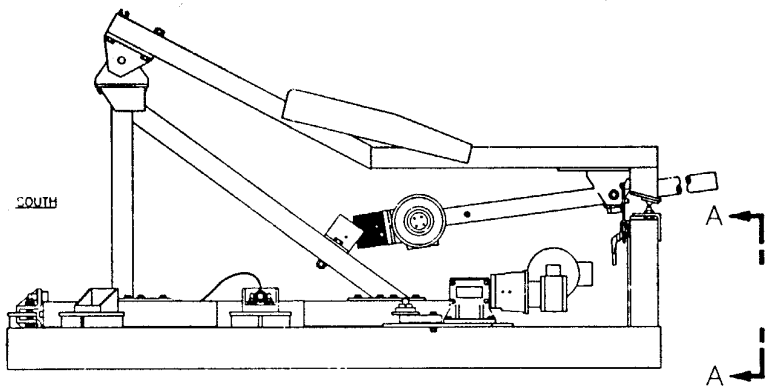
VIEW H–H

PROD. JHE 7/31/90	SIZE D	FSCM NO. 84147	DWG. NO. AE01E-D0253
CHK.	SCALE 1/5	TEQBVK4E	SHEET 4

REV. E

REVISIONS					
SF	ZONE	REV	DESCRIPTION	DATE	APPROVED
			REL TO PRODUCTION	7/11/89	JV
		A	SEE DCN P012.58	11/21/89	JV

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES.
2. DIMENSIONS APPLY BEFORE PLATING.
3. INTERPRET DRAWING PER ANSI Y14.5M-1982.
4. TO BE PACKAGED AND SHIPPED WITH ITEM 1.
5. DO NOT FASTEN CABLE TIES
   UNTIL ALL CABLES ARE INSTALLED AND ROUTED FROM THE MOTOR, LIMIT SWITCH, REMOTE CONTROL AND POLARIZATION DRIVE INSTALLATION. SEE LIMIT SWITCH INSTALLATION (AE01E-D0212) FOR FINAL CABLE ROUTING AND THE INSTALLATION OF CABLE TIES.
6. "DANGER" EQUIPMENT IS AT LINE VOLTAGE WHEN AC POWER IS CONNECTED TO THE LOCAL MOTOR CONTROLLER. ALL UNGROUNDED CONDUCTORS OF AC POWER LINE MUST BE DISCONNECTED FROM THE CONTROLLER BEFORE IT IS SAFE TO TOUCH ANY INTERNAL PARTS OF THIS EQUIPMENT. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN FATAL INJURY.
7. "WARNING" THIS EQUIPMENT SHOULD BE ADJUSTED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE EQUIPMENT AND THE HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.
8. BE SURE TO WEAR SAFETY GLASSES AT ALL TIMES WHEN PERFORMING MAINTENANCE.
9. BE SURE THE INPUT DISCONNECT IS IN THE CORRECT POSITION, EITHER 'ON' OR 'OFF' DEPENDING ON THE WORK TO BE PERFORMED.
10. "CAUTION" THE ANTENNA SHOULD BE DEPLOYED WITH FULL VISIBILITY OF THE AREA ABOVE AND AROUND THE ANTENNA.
11. ADDITIONAL NOTES ARE ON EACH SHEET OF THIS INSTALLATION, FOLLOW THESE NOTES FOR DETAIL INSTALLATION INSTRUCTIONS.
12. THE INSTRUCTION SHEETS AND MANUAL FOR EMTGN-22310 WHICH IS INSTALLED IN ITEM 1,"ASSEMBLY, MOTOR DRIVE CONTROLLER", ARE TO BE SHIPPED WITH KIT OR INSTALLATION.



EAST SIDE VIEW OF ANTENNA POSITIONER
SCALE: 1/4

QTY	ITEM NO.	U OF M	ANDREW PART NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	REF. DESIGNATOR	NOTES
1	20	EA	AE01S-D0386		SCHEMATIC DIAGRAM		4
1	19	EA	AE01S-D0287		BLOCK DIAGRAM		4
1	18	EA	AE01S-D0418		INTERCONNECTION DIAGRAM		4
6	17	EA	EWSHN-41009		WSHR,NEO,1/2 X .875 OD		
1	16	EA	ERCPE-93260		BOOT,NEMA L15 LOCK RCPT		4
2	14	EA	ERCPE-93160		BOOT,NEMA L5,L7 LOCK RCPT		4
1	13	EA	ERCPE-37200		RCPT,ELE,NEMA L7-20R		4
1	12	EA	ERCPE-35310		RCPT,ELE,NEMA L5-30R		4
1	11	EA	ERCPE-31520		RCPT,ELE,NEMA L15-20R		4
9	10	EA	EWSHL-11100		WASHER,LOCK,1/2,CRES		
7	9	EA	EWSHF-21008		WASHER,FLAT,1/2 x 1.370OD,CRES		
10	8	EA	EWSHF-11005		WASHER,FLAT,1/2 x.063THK,CRES		
9	7	EA	EMUTS-11110		NUT,HEX,1/2-13,SST		
2	6	EA	ESCRS-74020		SCREW,HEX CAP,1/2-13 x 1-1/2		
6	5	EA	ESCRS-74016		SCREW,HEX CAP,1/2-13 x 1		
1	4	EA	ESCRS-74022		SCREW,HEX CAP,1/2-13 x 1-3/4		
10.6	3	OZ	ERTVS-11330		RTV SEALANT,10.6 OZ TUBE		
1	2	EA	AE01A-D0541		ASSY,MOTOR DRIVE CONTROLLER		
1	1	EA	AE01A-D0540		ASSY,MOTOR DRIVE CONTROLLER		

PARTS LIST

AE01K-C0240	ESA43AP	
NEXT ASSY.	USED ON	
APPLICATION		

DRAWN	ROD	6/20/89
CHECKED	Pirsch	6/21/89
APPR. ENGR.	JHJ	7/11/89
APPR. QE	MMST	7/11/89
APPR. QPA	Dunbar	7/11/89

THIRD ANGLE PROJECTION

ANDREW CORPORATION, Electronic Technology Center, Richardson, TX U.S.A.

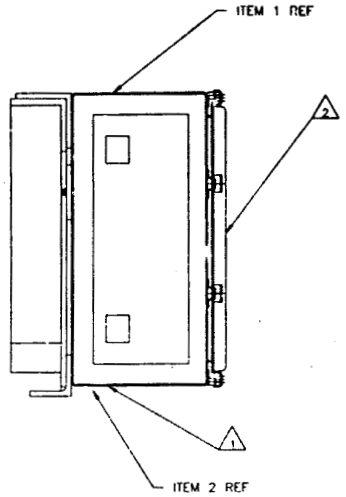
INSTALLATION, 4.5M-
MOTOR DRIVE CONTROLLER

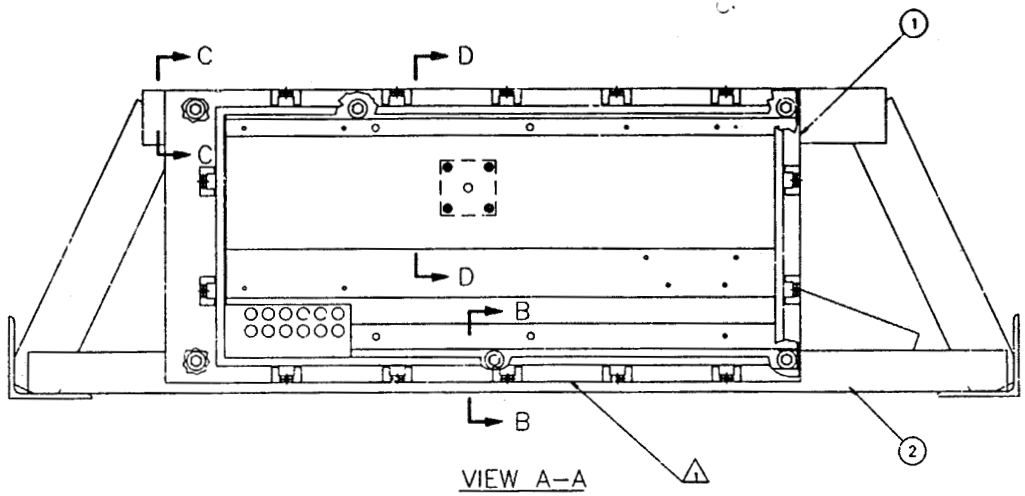
SIZE	DRAWING NO.	REV
D	84147	AE01E-D0235	A

SCALE: NONE | WEIGHT: | SHEET 1 OF 2

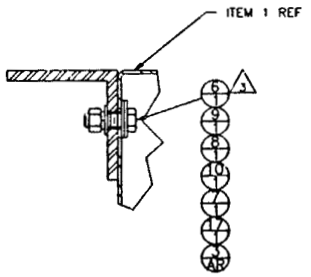
NOTES:

1. LOCATE ITEM 2 AND 1, CONTROLLER ENCLOSURE AND THE MOUNTING ANGLE, AGAINST EACH OTHER BEFORE TIGHTING THE BOLTS, ITEM 4, 6 AND 7.
2. REMOVE THE CONTROLLER COVER FOR THIS INSTALLATION. REPLACE AFTER ALL INSTALLATION ARE COMPLETE.
3. INSTALL ITEM 3 IN THE HOLES IN ITEM 2 AND 1 AND BETWEEN ITEMS 1 AND THE POSITIONER FRAME AND ALL WASHERS, ITEM 9.
4. SEE SHEET 1 FOR ADDITIONAL NOTES.

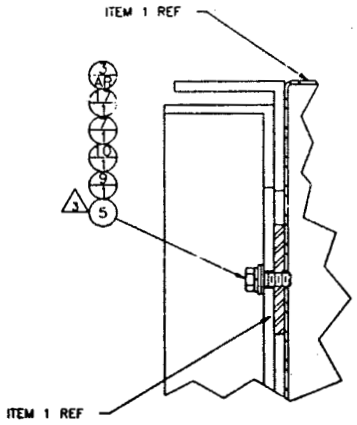




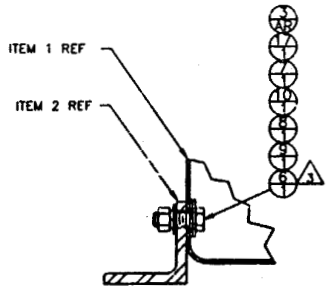
VIEW A-A



SECTION C-C
TYP 3 PLCS
SCALE: 1 / 2



SECTION D-D
SCALE: 1 / 2



SECTION B-B
TYP 3 PLCS
SCALE: 1 / 2

SHT	1	2	3	4	5
REV	B	B	B	B	B

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
–	RELEASED TO PROD.	17OCT89	R.J.P.
A	REVISED SHEET 4, ADDED REV. STATUS BLK.		M.K. S.L.I.
	REVISED SHEET 2 DCN D005.73(A)	24NOV93	K.J.C.
B	REVISED SHEETS 2 & 4 FOR NEW STRUT CONFIG.		
	UPDATED ALL REVISIONS (ECM D036.82 CLASS C)	05MAR04	T.E.

NOTES:(UNLESS OTHERWISE SPECIFIED)
1. REMOVE BURRS AND SHARP EDGES
2. DIMENSIONS APPLY BEFORE PLATING
3. INTERPRET PER ANSI Y14.5M–1994

4. ADDITIONAL NOTES ARE ON EACH SHEET OF THIS INSTALLATION, FOLLOW THESE NOTES FOR DETAIL INSTALLATION INSTRUCTIONS.

5. "CAUTION" THE ANTENNA SHOULD BE DEPLOYED WITH FULL VISIBILITY OF THE AREA ABOVE AND AROUND THE ANTENNA.

6. BE SURE THE INPUT DISCONNECT IS IN THE CORRECT POSITION, EITHER 'ON' OR 'OFF' DEPENDING ON THE WORK TO BE PERFORMED.

7. BE SURE TO WEAR SAFETY GLASSES AT ALL TIMES WHEN PERFORMING MAINTENANCE.

8. "WARNING" THIS EQUIPMENT SHOULD BE ADJUSTED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE EQUIPMENT AND THE HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.

9. "DANGER" EQUIPMENT IS AT LINE VOLTAGE WHEN AC POWER IS CONNECTED TO THE LOCAL MOTOR CONTROLLER. ALL UNGROUNDED CONDUCTORS OF AC POWER LINE MUST BE DISCONNECTED FROM THE CONTROLLER BEFORE IT IS SAFE TO TOUCH ANY INTERNAL PARTS OF THIS EQUIPMENT. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN FATAL INJURY.

10. TO INSTALL THE CRIMP TERMINALS, USE PANDUIT CT–500 CRIMP TOOL OR EQUIVALENT.

11. CABLE ROUTING SHOULD BE DONE IN SUCH A MANNER THAT CABLES ARE SUPPORTED WITHIN 12 INCHES FROM EACH CORD GRIP CONNECTOR AND THERE AFTER BE SUPPORTED EVERY 4 1/2 FEET MAXIMUM USING THE SUPPLIED MOUNTING HARDWARE.

12. DO NOT FASTEN CABLE TIES UNTIL ALL CABLES ARE INSTALLED AND ROUTED FROM THE MOTOR, LIMIT SWITCH, REMOTE CONTROL AND POLARIZATION DRIVE INSTALLATION. SEE LIMIT SWITCH INSTALLATION FOR FINAL CABLE ROUTING AND THE INSTALLATION OF CABLE TIES.

13. DEFINITION OF ABBREVIATIONS USED:
"POL LI" DENOTES "POLARIZATION LIMIT SWITCH"
"POL M" DENOTES "POLARIZATION MOTOR"
"POL" DENOTES "POLARIZATION RESOLVER".

14. WIRING INSTRUCTIONS FOR ALL LIMIT SWITCHES

READ THE LIMIT SWITCH WARNING LABEL INSTALLED IN THE MOTOR DRIVE CONTROLLER ENCLOSURE, LEFT HAND WALL, BEFORE PROCEDING WITH THIS INSTALLATION.

WARNING

IF LIMIT SWITCHES ARE NOT IN OPERATION, CARE MUST BE TAKEN NO TO EXCEED MAXIMUM AND MINIMUM JACK SCREW OR CHAIN DRIVE TRAVEL LIMITS WHEN OPERATING MOTORS.

15. THIS INSTALLATION OF THE MOTORIZED ANTENNA FEED IS ADDED TO THE ALREADY INSTALLED MANUAL POLARIZATION DRIVE FEED WITH STRUTS, INSTALLATION 239351 OF KIT 220220.

ALL SETTINGS AND ADJUSTMENTS OF THE 239351 INSTALLATION ARE VALID FOR THIS INSTALLATION. SETTING DIMENSIONS NOTED IN THIS INSTALLATION ARE EQUAL TO THOSE NOTED IN THE 239351 INSTALLATION.

THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.

QTY	ITEM NO.	UN of MEAS	ANDREW PART NO.		DESCRIPTION		
2	32	EA	ECLAT–41020		CABLE TIE,FLAG,18 LBS TS		
9	31	EA	ETERP–12130		TERMINAL,PIN,18AWG		
7	30	EA	ETERP–13130		TERMINAL,PIN,14 AWG		
3	29	EA	47384–2		MOTOR MOUNT CLEAT		
1	28	EA	205711–2		HELICAL COUPLING, 1/8 x 1/4		
1	27	EA	ESCRS–73620		SCREW,HEX CAP,1/4–20		
1	26	EA	9918–8		NUT,HEX CAP,1/4–20		
1	25	EA	ECLAT–92480		MOUNT,CABLE TIE,1/4 SCREW		
4	24	EA	ENUTS–11070		NUT,HEX,1/4–20,SST		
1	23	EA	ESCRS–73618		SCREW,HEX CAP,1/4–20x1.25LG		
1	22	EA	ESCRS–73616		SCREW,HEX CAP,1/4–20x1.0LG		
1	21	EA	ECNNC–40103		CONN CA,.375 DIA,1/2 STR		
1	20	EA	ECNNC–40104		CONN CA,.437 DIA,1/2 STR		
2	19	EA	ECONC–91101		LOCKNUT,CONDUIT FTG,1/2		
2	18	EA	ECONC–93024		SEAL RING,1/2 CONDUIT		
15	17	EA	ECLAT–12137		CABLE TIE,120LBS TS,4BD,WTHR		
1	16	EA	ECLAT–22199		TIE,CABLE,WTHR,RES,BLK,10BD		
3	15	EA	EWSHL–11060		WASHER,LOCK,1/4,CRES		
2	14	EA	EWSHL–11050		WASHER,LOCK,#10,CRES		
2	13	EA	EWSHL–11010		WASHER,LOCK,#2,CRES		
4	12	EA	EWSHF–10602		WASHER,FLAT,1/4x.032,CRES		
2	11	EA	EWSHF–10502		WASHER,FLAT,#10x.063,CRES		
2	10	EA	EWSHF–10102		WASHER,FLAT,#2x.032,CRES		
2	9	EA	ESCRS–11412		SCREW,PPH,10–32x.750LG		
2	8	EA	ESPCR–11201		SPACER,AL,.31 OD,#10x.125LG		
4	7	EA	ESCRS–22112		SCREW,PPH,2–56,.750 LG		
2	6	EA	205720		LIMIT SWITCH CLEAT		
2	5	EA	208343		ADHESIVE BACK CLIP		
1	4	EA	AE01C–C0424		ASSY,LIMIT SWITCH CABLE		
1	3	EA	AE01C–D0427		ASSY,RESOLVER CABLE		
1	2	EA	AE01A–C0628		ASSY,RESOLVER SUPPORT WLDMT		
1	1	EA	AE01A–D0615		ASSY,POL. MTZD. DRIVE UNIT		

PARTS LIST

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES
1 PLACE DECIMALS ±0.1
2 PLACE DECIMALS ±0.03
3 PLACE DECIMALS ±0.010
ANGLES ±
ALL SURFACES ✓

DRAWN BY	BENALLY	10NOV89
APPD ENG	HM	10NOV89
APPD MFG	JHE	10NOV89
APPD QA	AD	10NOV89
APPD	RJP	10NOV89

SUPERSEDES
USED ON AE01K–D0259

ANDREW CANADA INC. WHITBY, ONTARIO CANADA

INSTALLATION, POLARIZATION MOTORIZED DRIVE

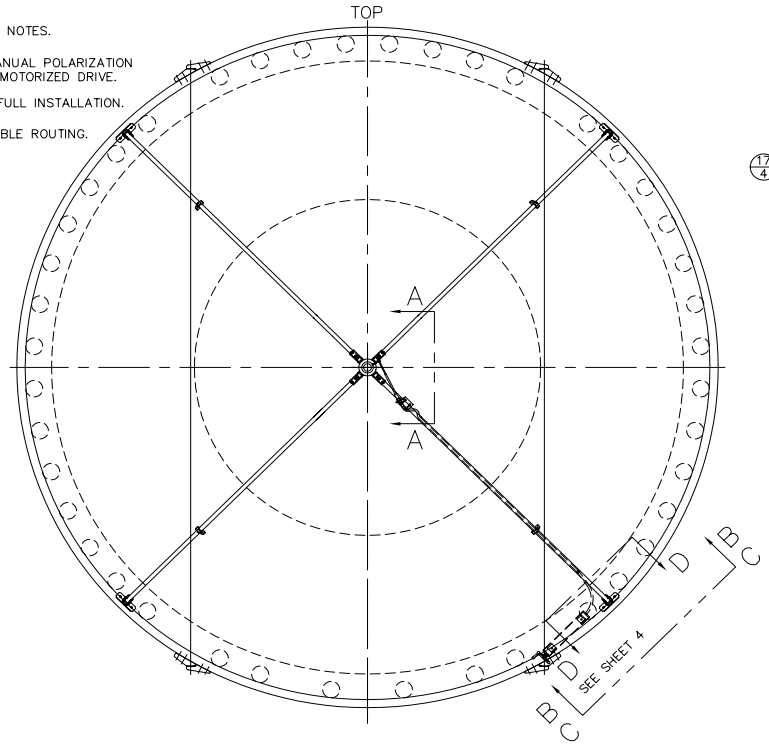
SIZE	CAGE CODE	DOCUMENT NO.
D	35844	AE01E–D0275

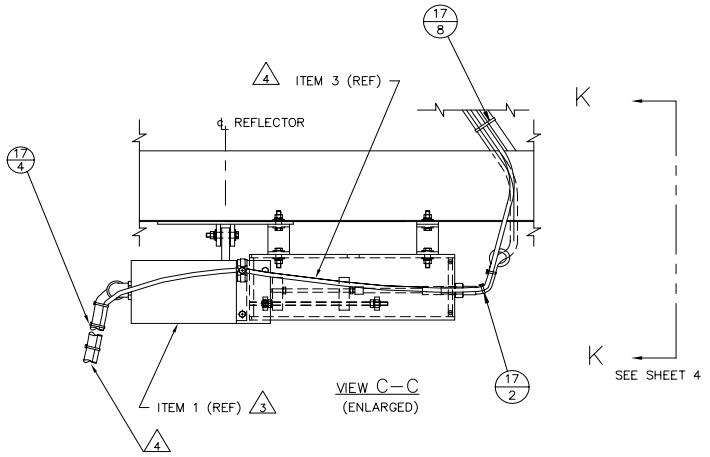
CAD NO.AE01E–D0275.1.B | SCALE 1=1 | SHEET 1 of 5

NOTICE: These drawings and specifications are the proprietary property of ANDREW CORPORATION and may be used only for the specific purpose authorized in writing by Andrew.

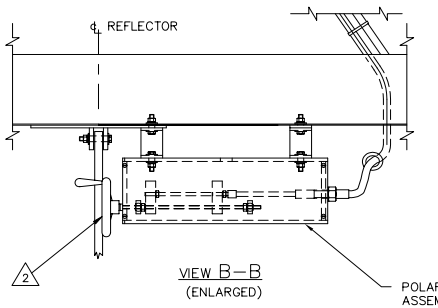
NOTES:

1. SEE SHEET ONE FOR ADDITIONAL NOTES.
2. REMOVE HAND CRANK FROM MANUAL POLARIZATION DRIVE BEFORE INSTALLING THE MOTORIZED DRIVE.
3. SEE SHEET 3, VIEW D–D, FOR FULL INSTALLATION.
4. SEE SHEET 4 FOR FURTHER CABLE ROUTING.



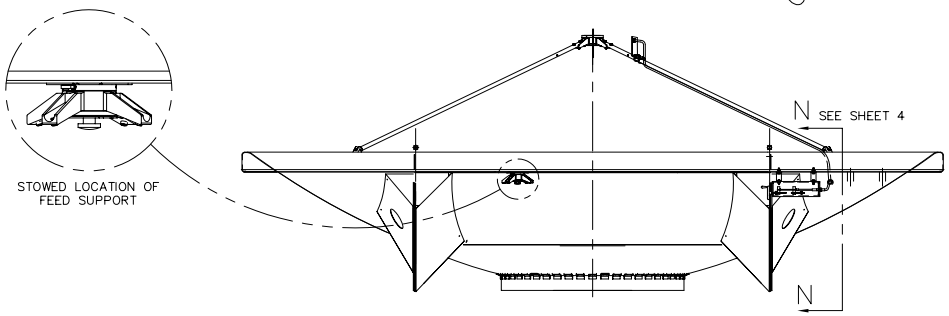


VIEW C–C
(ENLARGED)



VIEW B–B
(ENLARGED)

POLARIZATION MANUAL DRIVE ASSEMBLY AS INSTALLLED PRIOR TO INSTALLATION OF THE MOTORIZED KIT.



PREP. BENALLY 9/14/89	SIZE D	FSCM NO. 84147	DWG. NO. AE01E-D0275	REV.
CHK.	SCALE 1/1	AE01E-D0275.2.B	SHEET 2	

DWG. NO. AE01E-D0275 SH 3

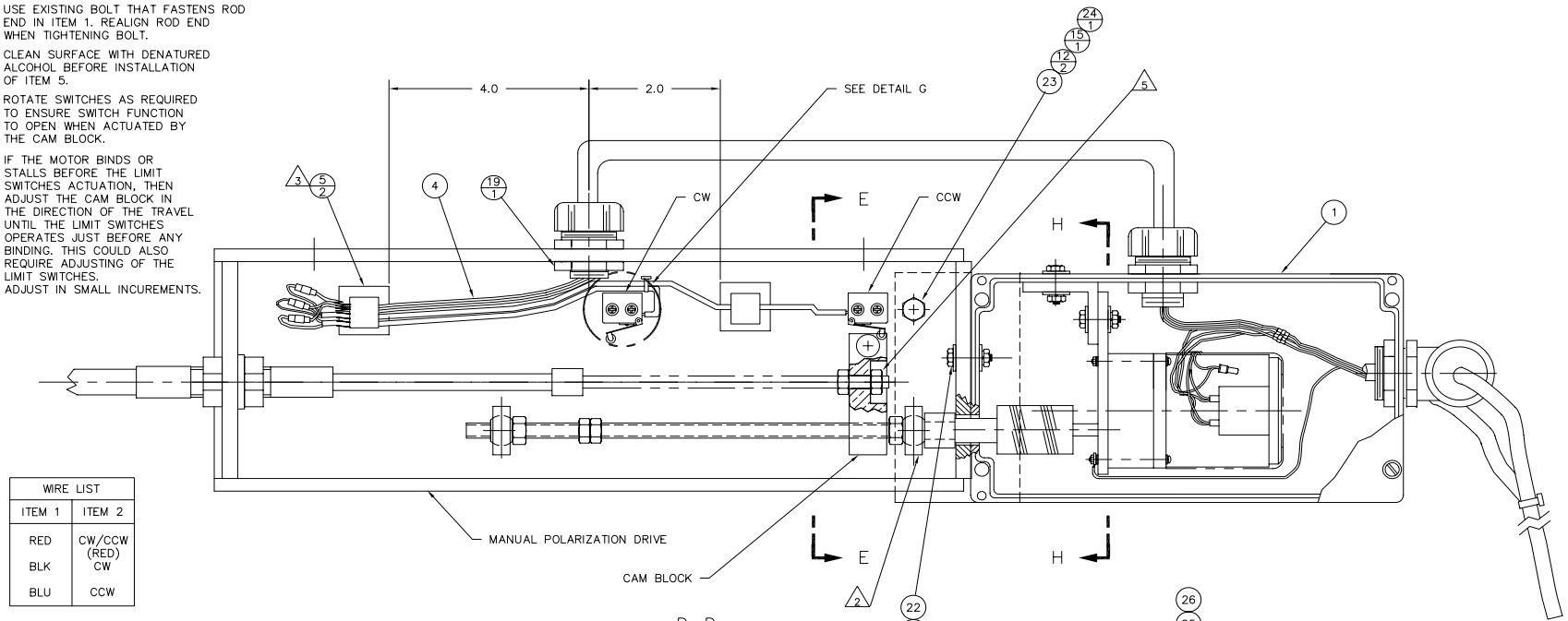
NOTES:
1. SEE SHEET ONE FOR ADDITIONAL NOTES.

△2 USE EXISTING BOLT THAT FASTENS ROD END IN ITEM 1. REALIGN ROD END WHEN TIGHTENING BOLT.

△3 CLEAN SURFACE WITH DENATURED ALCOHOL BEFORE INSTALLATION OF ITEM 5.

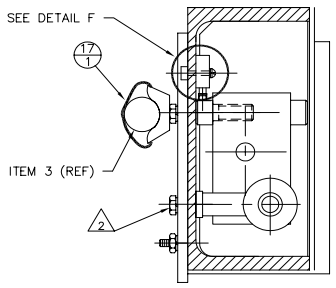
△4 ROTATE SWITCHES AS REQUIRED TO ENSURE SWITCH FUNCTION TO OPEN WHEN ACTUATED BY THE CAM BLOCK.

△5 IF THE MOTOR BINDS OR STALLS BEFORE THE LIMIT SWITCHES ACTUATION, THEN ADJUST THE CAM BLOCK IN THE DIRECTION OF THE TRAVEL UNTIL THE LIMIT SWITCHES OPERATES JUST BEFORE ANY BINDING. THIS COULD ALSO REQUIRE ADJUSTING OF THE LIMIT SWITCHES.
ADJUST IN SMALL INCUREMENTS.

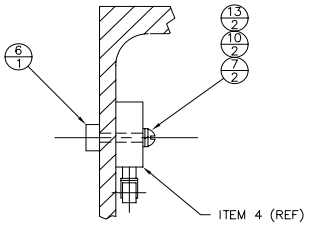


WIRE LIST	
ITEM 1	ITEM 2
RED	CW/CCW (RED)
BLK	CW
BLU	CCW

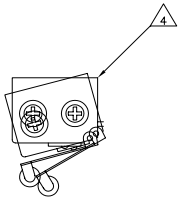
VIEW D-D
SEE SHEET 2



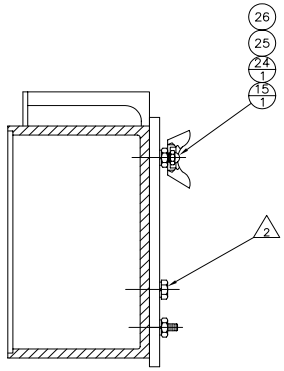
SECTION E-E



DETAIL F
SCALE: 2/1
2 PLCS



DETAIL G
SCALE: 2/1
2 PLCS

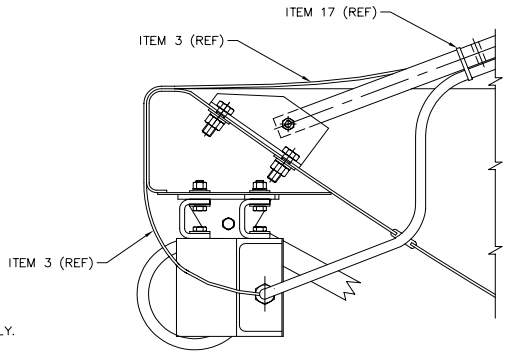


SECTION H-H

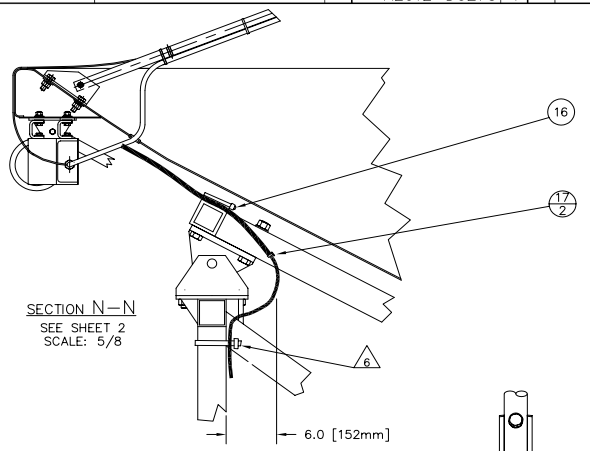
PREP. RGG 10/5/89	SIZE D	FSCM NO. 84147	DWG. NO. AE01E-D0275	REV.
CHK.	SCALE 1/1		AE01E-D0275.3.B	SHEET 3

NOTES:

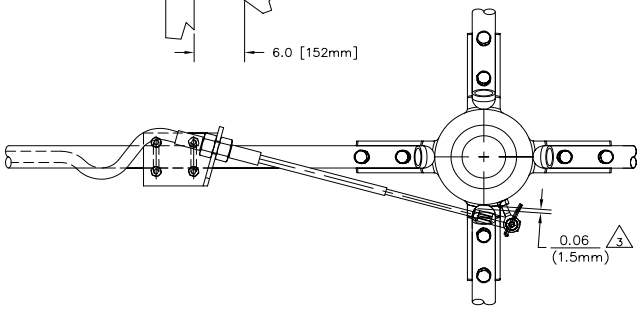
1. SEE SHEET ONE FOR ADDITIONAL NOTES.
2. SET ITEM 3, RESOLVER CABLE ASSEMBY, TO READ 180° ON THE APC100, ANTENNA PROGRAMABLE CONTROLLER, WHEN THE FEED SUPPORT ASSEMBLY IS LOCATED IN THE MID POINT OF THE PUSH/PULL SHAFT STROKE. THE MID POINT OF THE PUSH/PULL SHAFT STROKE CAN BE ESTABLISHED BY LOCATING A CENTER LINE ON THE CAM BLOCK AND LOCATING THIS LINE HALFWAY BETWEEN THE LIMIT SWITCH CAMS. TO SET RESOLVER, LOOSEN THE THREE MOTOR CLEAT SCREWS, ITEM 29, ROTATING THE RESOLVER UNTIL THE READING ON THE APC100 IS 180°. RETIGHTEN THESE SCREWS.
3. THE DIMENSION AND SETTING NOTED SHOULD HAVE BEEN SET DURING THE 239351 INSTALLATION. SEE NOTE 15 ON SHEET ONE.
4. ALIGN ITEMS 2, 28 AND 3 WITH THE REPLACED BOLT IN THE CLEVIS.
5. THE ROTATION READOUT ON THE APC100 WILL NOT BE EQUAL TO THE ROTATION OF THE FEED SUPPORT ASSEMBLY. 82° READOUT WILL GIVE YOU 90° ROTATION OF FEED SUPPORT ASSEMBLY.
6. SEE INSTALLATION,(LIMIT SWITCH, CABLE ROUTING), AE01E-D0212 AND NOTE 12 ON SHEET ONE.

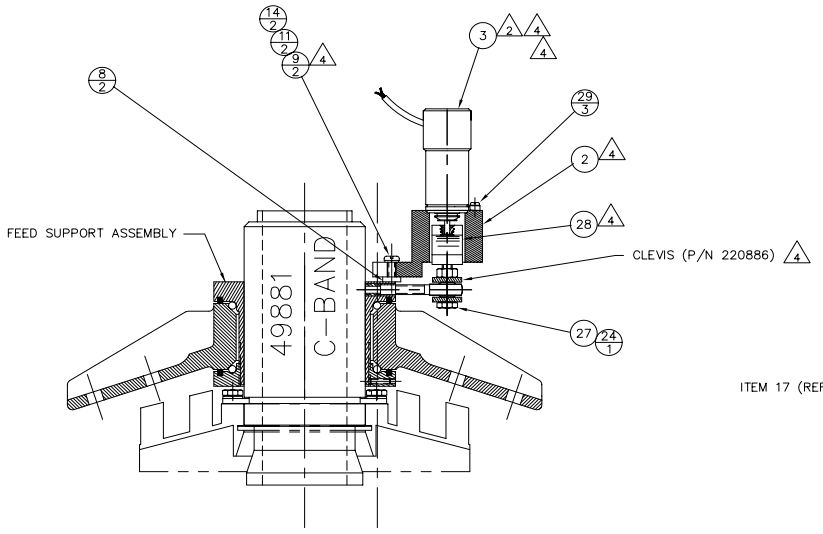


SECTION K–K
SEE SHEET 2
SCALE: NONE

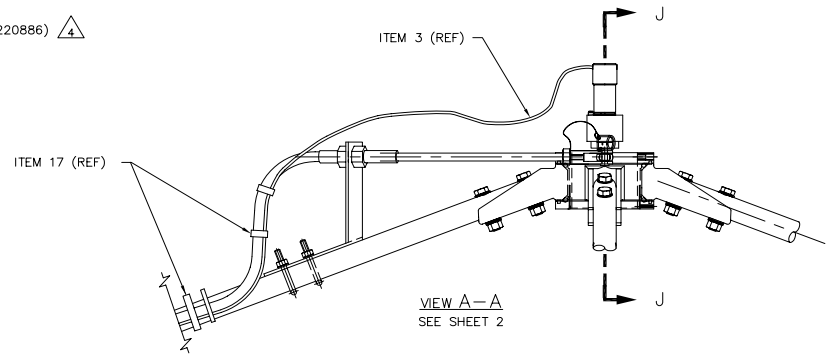


SECTION N–N
SEE SHEET 2
SCALE: 5/8





SECTION J–J
SCALE: NONE

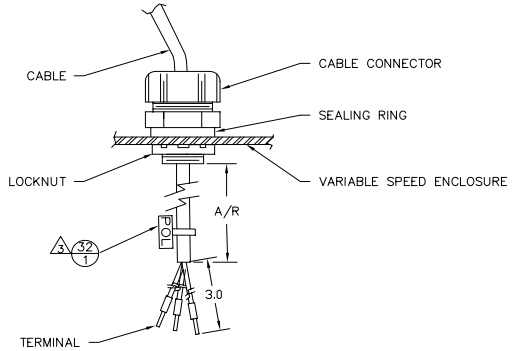


VIEW A–A
SEE SHEET 2

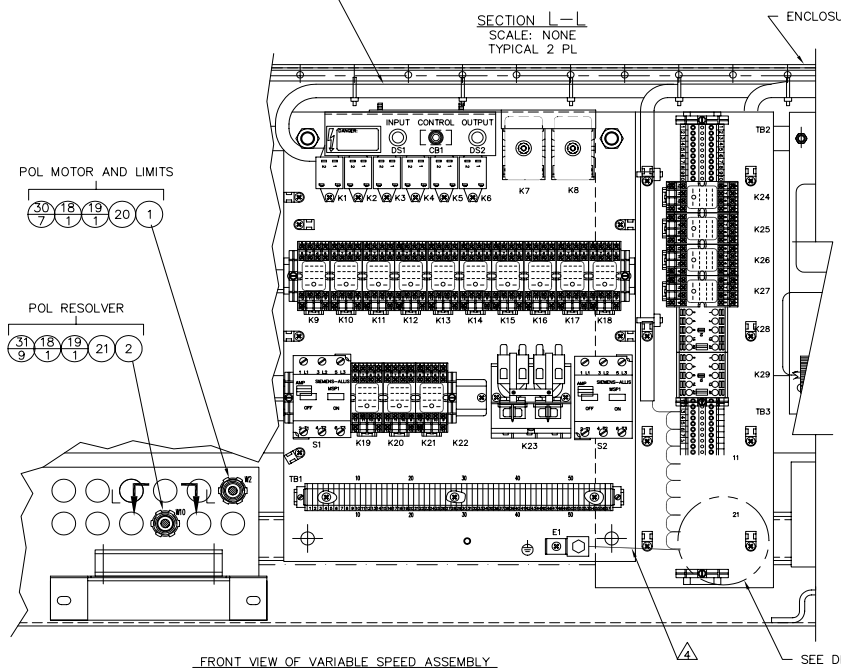
PREP. MCB 9/19/89	SIZE D	FSCM NO. 84147	DWG. NO. AE01E-D0275 REV.
CHK.	SCALE 1/8	AE01E-D0275.4.B	SHEET 4

NOTES:

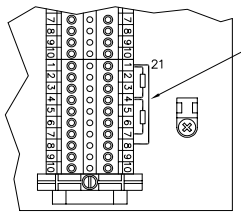
1. REMOVE 3 INCHES OF CABLE JACKET FROM CABLE, STRIP CONDUCTOR END .19 INCHES AND LOCATE CABLE IN CABLE CONNECTOR APPROXIMATELY AS SHOWN IN SECTION J–J.
   INSTALL TERMINALS AFTER THE CABLES HAVE BEEN FED THROUGH THE CABLE CONNECTORS.
2. REFER TO INTERCONNECT DIAGRAM AE01S-D0456 FOR HOOKUP INFORMATION.
3. MARK CABLE TIE (ITEM 32) PER WIRE LIST WITH PERMANENT INK. SEE SHEET ONE FOR DEFINITIONS OF THE ABBREVIATIONS USED.
4. INSTALL IF MOTORIZED POLARIZATION IS NOT USED.
5. SEE SHEET ONE FOR ADDITIONAL NOTES.



SECTION L–L
SCALE: NONE
TYPICAL 2 PL



FRONT VIEW OF VARIABLE SPEED ASSEMBLY



DETAIL M
SCALE: NONE

TB3

POLARIZATION RESOLVER ON ANTENNA	BLACK	21	RED	4 AE01C-D0401 17 PAIR SHIELDED, 22 AWG, CABLE /AE01C-C0411
	RED	22	ORANGE	
	SHIELD	23		
	BLACK	24	GREEN	4
	WHITE	25	WHITE	
	SHIELD	26		
	BLACK	27	GREEN	4
	GREEN	28	YELLOW	
	SHIELD	29		

WIRE LIST 3 — TB2

POL LMT SW	CW	7 CONDUCTOR, 16 AWG, SDN CABLE	YEL	16 AWG	10
	COM		RED/BLK	16 AWG	11
	CCW		BRN	16 AWG	12
POL MOTOR	CW		RED	16 AWG	13
	RTN		BLK	16 AWG	14
	CCW		BLU	16 AWG	15
	FRM		ORN	16 AWG	16

POLARIZATION MOTOR AND RESOLVERS WIRING AT CONTACTOR PLATE

PREP. BENALLY 9/14/89	SIZE D	FSCM NO. 84147	DWG. NO. AE01E-D0275	REV.
CHK.	SCALE 1/2	AE01E-D0275.5.B	SHEET 5	

NOTES: (UNLESS OTHERWISE SPECIFIED)
1. REMOVE ALL BURRS AND SHARP EDGES.
~~2. DIMENSIONS APPLY BEFORE PLATING.~~
3. INTERPRET DRAWING PER ANSI Y14.5M-1982.
(NOTES CONTINUED ON SHEET 2)

DWG. NO. AE01E-D0212 SH 1

REVISION STATUS	REV	E	D	E	D	D	D	D	D
	SHEETS	1	2	3	4	5	6	7	8	9

REVISIONS

MF	ZONE	REV.	DESCRIPTION	DATE	APPROVED
		E	SEE MICROFILM FOR PREVIOUS REVISIONS. DELETED NOTE 2. DIST WAS 'P'. ADDED REVISION STATUS BLOCK. REVISED SHEET 3. DCN D003.29(A)	08MAY92	MK

(PARTS LIST CONTINUED ON SHEET 2)

QTY	ITEM NO.	U OF M	ANDREW PART NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	REF. DESIGNATOR	NOTES
	DASH NO./DETAIL						
3	68	EA	ESCRS-74020		SCREW,HEX CAP,1/2-13x1.50 LG		
1	67	EA	AE01A-D0673		ASSY,LIMIT SWITCH,STRUT		
1	66	EA	AE01D-C0811		BRACKET, CLAMP		
.3	65	FT	EWIRH-09207		WIRE,HOOK UP,16 AWG,BLU		
1	64	EA	ETERP-15230		TERM,PIN,10 AWG		
2	63	EA	ETERD-43730		TERM,FEM,14 AWG,.250 TAB		
3	62	EA	ETERR-13120		TERM,RING,14 AWG,#6,BLU		
1	61	EA	AE01C-B0292		CABLE ASSY,LIMIT SWITCH		
1	60	EA	201921		WARNING LABEL		
5	59	EA	ECLAT-12020		CABLE TIE, 18 LS TS		
5	58	EA	ETERS-12330		SPLICE,BUTT,SHRINK,14 AWG		
26	57	EA	ECLAT-12102		CABLE TIE, 40LB,2.0 OD,BLK		21
14	56	EA	ECLAT-22199		CABLE TIE, 250LB,10LG		
40	55	FT	ECABM-60802		CABLE,2 COND,16 AWG,SDN		
13	54	EA	ECLAT-92480		MOUNT, CABLE TIE,1/4SCREW		
13	53	EA	ESCRS-22608		SCREW,PPH,1/4-20 x.5,CRES		
~~1~~	~~52~~	~~EA~~	~~AE01D-C0737~~		~~BRKT,CABLE MTG,AZ RESLVR~~		
~~6~~	~~51~~	~~EA~~	~~EWSHF-10065~~		~~WASHER,FLAT,#1/4 x.063,CRES~~		
~~2~~	~~50~~	~~EA~~	~~AE01D-B0732~~		~~ROD,THREADED,CABLE MOUNT~~		
~~2~~	~~49~~	~~EA~~	~~AE01D-B0737~~		~~BRACKET, CABLE MOUNT~~		
9	48	EA	ETERP-13130		TERM,PIN,14 AWG,BLU		
2	47	EA	ECLAT-12052		CABLE,TIE,40LBS TS,8.1Lg,BLK		
6	46	EA	EWSHL-11070		WASHER,LOCK,#5/16,CRES		
6	45	EA	ENUTS-11080		NUT,HEX,5/16-18,SST		
6	44	EA	9972-27		SHCS,5/16-18 x 1.25 LG,SST		
1	43	EA	ESWLM-31402		SWITCH,MICRO,PU BUTTON,LIMIT		
.1	42	FT	ESLES-12060		TUBING,HEAT SHRINK,1/4		
1	41	EA	AE01D-D0735		BRKT,EL HOME LIMIT SWITCH		
1	40	EA	AE01D-C0660		BRKT,ACTUATOR,EL HOME LIMIT		
13	39	EA	11185-3		LEG CLAMP		
2	38	EA	ETERD-33730		TERM,MALE,14 AWG,.250 TAB		
15	37	FT	ECABM-60803		CABLE,3 COND,16 AWG,SDN		
4	36	EA	ECLAT-41020		CABLE TIE,MARKER 18LB		
22	35	EA	ECLAT-12137		CABLE TIE, 120 LB,4.00D		
1	34	EA	9905-47		TAPE,TEFLON,1/2W, 5 FT		
1	33	EA	ECNNC-60103		CONN,CA,.375 DIA,1/2,90		
4	32	EA	9953-7		BOLT,SQH,1/4-20 x 1.0 LG,SST		
11	31	EA	EWSHL-11060		WASHER,LOCK,#1/4,CRES		
4	30	EA	EWSHF-20605		WASHER,FLAT,#1/4 x.75,CRES		
4	29	EA	ENUTS-11070		NUT,HEX,1/4-20,SST		
2	28	EA	ESCRS-73618		SCR,HEX CAP,1/4-20x1.25LG,SST		
2	27	EA	9972-197		SHCS,10-32 x 2.5 LG,SST		
2	26	EA	EWSHL-11050		WASHER,LOCK,#10,CRES		
1	25	EA	20860-71		ROTARY SWITCH		
1	24	EA	20860-72		MICRO SWITCH,ACTUATOR		
2	23	EA	AE01D-B0657		CLAMP,CAM		
1	22	EA	AE01D-D0668		BRACKET,AZ LIMIT SWITCH		
1	21	EA	200852		STICK WAX		
1	20	EA	12225		LUBRICANT		
4	19	EA	EWIRN-55100		WIRE CONN,18 AWG,SET SCREW		
19.2	18	FT	ECABM-60804		CABLE,4 COND,14 AWG,SDN		
4	17	EA	ECONC-93024		SEALING RING,1/2 CONDUIT		
4	16	EA	ECONC-91101		LOCK,CONDUIT FIT,1/2		
4	15	EA	ECNNC-40103		CONN,CA,.375 DIA,1/2,STR		
.1	14	FT	ETUBE-11201		TUBE,EPDM,BLK,3/4 ID,1/16 WALL		
2	13	EA	ENUTS-11040		NUT,HEX,8-32,SST		
7	12	EA	EWSHL-11040		WASHER,LOCK,#8,CRES		
7	11	EA	EWSHF-10402		WASHER,FLAT,#8 x .032,CRES		
4	10	EA	ESCRS-22412		SCREW,PPH,8-32 x .75 LG,CRES		
3	9	EA	ESCRS-22408		SCREW,PPH,8-32 x .5LG,CRES		
1	8	EA	ESHFT-13016		SHAFT,1/4D X 2.00 LG		
1	7	EA	205711-3		COUPLING,1/4 x 1/4,HELICAL		
1	6	EA	9912-177		DRIVE PIN,1/4D x .75 LG,TYP E		
2	5	EA	9997-227		WASHER,FLAT,#5/8 x 1.31,GALVS		
2	4	EA	45980-22		BOLT ASSY,5/8-11 x 2.5 LG		
1	3	EA	AE01D-D0652		BRACKET,EL LIMIT SWITCH		
1	2	EA	208691		ENCLOSURE BRACKET		
1	1	EA	AE01A-D0594		ASSY, ROTARY LIMIT SWITCH		

PARTS LIST

THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally to the trade of ANDREW shall be confidential except to any extent to which it is subsequently to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

	AE01K-D0241	ESA45AP
	NEXT ASSY.	USED ON

APPLICATION

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED, DUAL DIMENSIONED DIMS ARE IN MILLIMETERS [INCHES]. SINGLE DIMENSIONED DIMS ARE IN INCHES.

METRIC

TOL. ON METRIC DIM.: .X=±0.5, .XX=±0.2
HOLE DIAMETERS:
UNDER 6.350 = +0.13 -0.13
6.35 TO 12.70 = +0.15 -0.13
OVER 12.70 = +0.20 -0.13
ANGLES: ±1.0°
CONCENTRICITY BETWEEN DIA. ON A COMMON AXIS TO BE WITHIN 0.25 ø.

US CUSTOMARY [ ]

TOL. ON [ ] DIM.: .X=±.01 .XX=±.02, .XXX=±.005
HOLE DIAMETERS:
UNDER .2500 = +.005 -.005
.251 TO .5000 = +.008 -.005
OVER .5000 = +.010 -.005
ANGLES: ±1.0°
CONCENTRICITY BETWEEN DIA. ON A COMMON AXIS TO BE WITHIN .010 ø.

THIRD ANGLE PROJECTION

DRAWN	JHE	5/9/89
CHECKED	PAYNE	9/26/89
APPD. ENGRG	JHE	9/26/89
APPD. QC	HRM	9/26/89
APPD. MFG.	AD	9/26/89

ANDREW CORPORATION
Electronic Technology Center
Richardson, TX U.S.A.

INSTALLATION, LIM SW'S, CABLE ROUTING, 4.5M TRANSPORTABLE

SIZE	ITEM NO.	DWG. NO.	REV.
D	84147	AE01E-D0212	E

SCALE FULL | TEOBUC1E | SHEET 1 OF 9

PROD. CR. 628 | DISTR. A

NOTES: (CON'T FROM SHEET ONE)

4. THE MOTORIZATION KIT, AE01K-D0250, INSTALLATION, AE01E-D0253, AND THE RESOLVER AND REMOTE CONTROL, AE01K-C0253 (AE01K-D0240), INSTALLATION, AE01E-D0240, CABLES ARE TO BE ROUTED BY SHEETS SEVEN AND EIGHT OF THIS INSTALLATION. DO NOT INSTALL THE CABLE TIES UNTIL NOTE ABOVE KIT CABLES ARE INSTALLED.

5. IF THE HOLES ARE NOT DRILLED IN POSITIONER FRAME FOR ITEM 22, AZ LIMIT SWITCH BRACKET, USE AE01A-D0529, TOOL ASSEMBLY AZ LIMIT SWITCH.

   OBTAIN THIS DRILL TOOL FROM ANDREW CORPORATION, 1850 N. GREENVILLE, RICHARDSON, TEXAS U.S.A. 75081.

6. WIRING INSTRUCTIONS FOR ALL LIMIT SWITCHES

   READ AND INSTALL ITEM 60, LIMIT SWITCH WARNING LABEL ON THE INSIDE LEFT HAND WALL OF THE MOTOR DRIVE CONTROLLER ENCLOSURE.

   WARNING

   IF LIMIT SWITCHES ARE NOT IN OPERATION, CARE MUST BE TAKEN NO TO EXCEED MAXIMUM AND MINIMUM JACK SCREW OR CHAIN DRIVE TRAVEL LIMITS WHEN OPERATING MOTORS.

7. DEFINTION OF ABBREVIATIONS USED:
   "AZ LI" DENOTES "AZIMUTH LIMIT SWITCH"
   "EL LI" DENOTES "ELEVATION LIMIT SWITCH"
   "HO LI" DENOTES "HOME LIMIT SWITCH".

8. DO NOT FASTEN CABLE TIES
   UNTIL ALL CABLES ARE INSTALLED AND ROUTED FROM THE MOTOR, LIMIT SWITCH, REMOTE CONTROL AND POLARIZATION DRIVE INSTALLATION. SEE LIMIT SWITCH INSTALLATION FOR FINAL CABLE ROUTING AND THE INSTALLATION OF CABLE TIES.

9. CABLE ROUTING SHOULD BE DONE IN SUCH A MANNER THAT CABLES ARE SUPPORTED WITHIN 12 INCHES FROM EACH CORD GRIP CONNECTOR AND THERE AFTER BE SUPPORTED EVERY 4 1/2 FEET MAXIMUM USING THE SUPPLIED MOUNTING HARDWARE.

10. TO INSTALL THE CRIMP TERMINALS, USE PANDUIT CT-500 CRIMP TOOL OR EQUIVALENT.

11. TO INSTALL THE CRIMP AMPHENOL RECEPTACLE WITH SOCKET, USE AMPHENOL TOOL P/N 347-100, LOCATOR P/N 357-300-02, AND INSERTER BIT P/N356-400-1 WITH HANDLE P/N 356-200 OR EQUIVALENT.

12. "DANGER" EQUIPMENT IS AT LINE VOLTAGE WHEN AC POWER IS CONNECTED TO THE LOCAL MOTOR CONTROLLER. ALL UNGROUNDED CONDUCTORS OF AC POWER LINE MUST BE DISCONNECTED FROM THE CONTROLLER BEFORE IT IS SAFE TO TOUCH ANY INTERNAL PARTS OF THIS EQUIPMENT. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN FATAL INJURY.

13. "WARNING" THIS EQUIPMENT SHOULD BE ADJUSTED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE EQUIPMENT AND THE HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.

14. BE SURE TO WEAR SAFETY GLASSES AT ALL TIMES WHEN PERFORMING MAINTENANCE.

15. BE SURE THE INPUT IS DISCONNECT IS IN THE CORRECT POSITION, EITHER 'ON' OR 'OFF' DEPENDING ON THE WORK TO BE PERFORMED.

16. "CAUTION" THE ANTENNA SHOULD BE DEPLOYED WITH FULL VISIBILITY OF THE AREA ABOVE AND AROUND THE ANTENNA.

17. ADDITIONAL NOTES ARE ON EACH SHEET OF THIS INSTALLATION, FOLLOW THESE NOTES FOR DETAIL INSTALLATION INSTRUCTIONS.

18. "WARNING" DO NOT ATTEMPT TO SET OR ADJUST LIMIT SWITCHES UNTIL ALL THE MOTORS ARE RUNNING IN THE CORRECT DIRECTION PER INSTALLATION DRAWING, AE01E-D0253.

19. "CAUTION" DO NOT EXCEED THE MECHANICAL LIMITS OF THE ANTENNA.

20. FOLLOW THE INDIVIDUAL INSTRUCTIONS FOR EACH OF THE LIMIT SWITCHES IN THIS INSTALLATION DRAWING.

21. UTILIZE CABLE TIES (ITEM 57) TO BUNDLE CABLES AS REQUIRED.

22. WRAP BOTH ENDS OF HEAT SHRINK, ITEM 78, FOR A WEATHER TIGHT SEAL.

THIS PARTS LIST FOR REFERENCE ONLY
DO NOT ORDER

(PARTS LIST CONTINUED FROM SHEET ONE)

QTY	ITEM NO.	U OF M	ANDREW PART NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	REF. DESIGNATOR	NOTES
1	79	EA	ETAPE-51088		TAPE,VINYL,1/2 IN. W,GRY		22
3	78	EA	ETERS-11330		SPLC,BUTT,SHRNK,22-18AWG		
1	77	EA	AE01D-C1150		BRACKET,CA MT,4.5M		
1	76	EA	AE01D-B0813		BRACKET,TRIPPING		
2	75	EA	EWSHF-10501		WASHER,FLAT,#10 X .032,CRES		
3	74	EA	EWSHF-11005		WASHER,FLAT,1/2 X .063,CRES		
2	73	EA	EWSHL-11050		WASHER,LOCK,#10 CRES		
2	72	EA	ENUTS-11050		NUT,HEX,10-32,SST		
2	71	EA	ESCRS-11410		SCREW,PPH,10-32x.625 LG		
3	70	EA	EWSHL-11100		WASHER,LOCK,1/2 SST		
3	69	EA	ENUTS-11110		NUT,HEX,1/2-13,SST		

DASH NO./DETAIL

NOTES:

1. SEE SHEET TWO FOR ADDITIONAL NOTES.

2

TENSIONING PROCEDURES A-325 HARDWARE

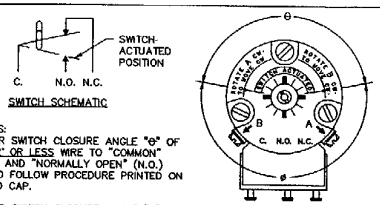
1. LUBRICATE BOLT THREADS WITH STICK WAX (ITEM 21) TO REDUCE FRICTION. DO NOT ALLOW WAX UNDER FLAT WASHER.
2. AFTER CONNECTIONS ARE COMPLETED, TIGHTEN BOLTS UNTIL SURFACES ARE JOINED AND NUTS ARE SNUG, i.e., FULL EFFORT OF PERSON USING ORDINARY SPUD WRENCH. DO NOT PROCEED WITH STEPS 3 & 4 BELOW UNLESS THE CONNECTION IS FINAL. IF BOLTS ARE LOOSENED AFTER STEPS 3 AND 4, DISCARD AND REPLACE WITH NEW HARDWARE. REPEAT ALL STEPS.
3. MARK NUTS AND ENDS OF BOLTS WITH STRAIGHT LINE (SEE FIGURE 1).
4. TIGHTEN NUTS FURTHER WITH EXTRA LONG WRENCH OR POWER WRENCH UNTIL NUTS ARE MOVED 1/3 TURN (120°±30°) PER FIGURE 2.

USE FELT MARKER

FIG. 1 BEFORE TENSIONING

FIG. 2 AFTER TENSIONING

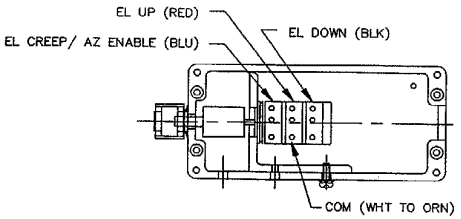
3



NOTES:
1. FOR SWITCH CLOSURE ANGLE "θ" OF 182° OR LESS WIRE TO "COMMON" (C) AND "NORMALLY OPEN" (N.O.) AND FOLLOW PROCEDURE PRINTED ON END CAP.
2. FOR SWITCH CLOSURE ANGLE "ø" OF 182° OR GREATER WIRE TO "COMMON" (C) AND "NORMALLY CLOSED" (N.C.) AND ADJUST IN (360°−ø) ACCORDING TO PROCEDURE PRINTED ON END CAP.

DIMENSIONS FIGURE 1

4. INDIVIDUAL SWITCH IDENTIFICATION OF ITEM 1, ROTARY SWITCH ASSY.



5 SET THE INDIVIDUAL SWITCHES OF ITEM 1, ROTARY LIMIT SWITCH ASSEMBLY, AS FOLLOWS USING THE ELEVATION DIAL INDICATOR ON THE ANTENNA POSITIONER AS SHOWN IN VIEW R-R.

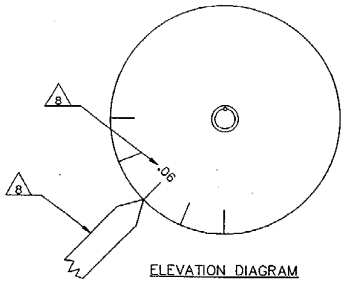
EL DOWN LIMIT: 15°.
EL CREEP/ AZ ENABLE: 87° OR 4.2 INCHES ABOVE THE POSITIONER FRAME STOP PAD.
EL UP LIMIT: 92° OR EVEN WITH POSITIONER FRAME TOP ANGLE.

EL UP, DOWN AND EL CREEP/ AZ ENABLE LIMIT SWITCH				CONTACTOR PANEL MOTOR DRIVE CONTROLLER TB1	
LIMIT SWITCH ASSY	EL DOWN	BLK	4 CONDUCTOR, 16 AWG, SDN CABLE	BLK	20
	COM	WHT		ORN	18
	AZ EN	BLU		BLU	32
	EL CRP				34
	EL UP	RED		RED	

6. ALL LIMIT SWITCHES ARE NORMALLY CLOSED AND GO TO 'OPEN' TO STOP MOVEMENT OR ROTATION EXCEPT AZ ENABLE WHICH IS OPEN AND GOES TO CLOSED TO INHIBIT MOVEMENT.

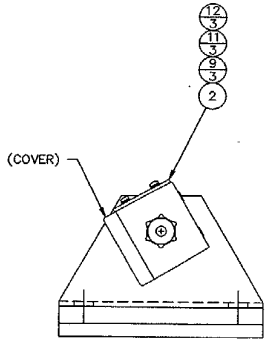
7. WARNING IF LIMIT SWITCHES ARE NOT IN OPERATION, CARE MUST BE TAKE NOT TO EXCEED MAXIMUM AND MINIMUM JACK SCREW TRAVEL LIMITS WHEN OPERATING MOTORS.

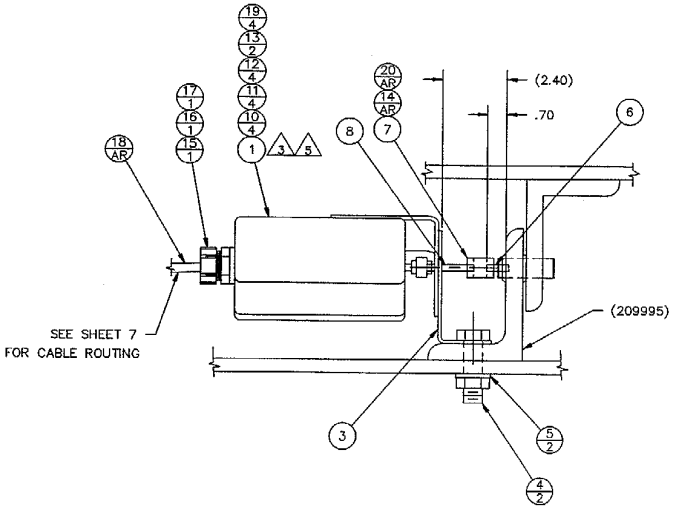
8 ELEVATION DIAL ON POSITIONER IN THE STOW POSITION.



ELEVATION DIAGRAM

VIEW R-R
SEE SHEET 7





VIEW E
SEE SHEET 7

ELEVATION UP, DOWN AND ELEVATION CREEP/ AZIMUTH ENABLE LIMIT SWTCH INSTALLATION

PREP. JHE 5/11/09	SIZE D	ITEM NO. 84147	DWG NO. AE01E-D0212	REV E
CHK.	SCALE NONE		TEOBUC3E	SHEET 3

NOTES:

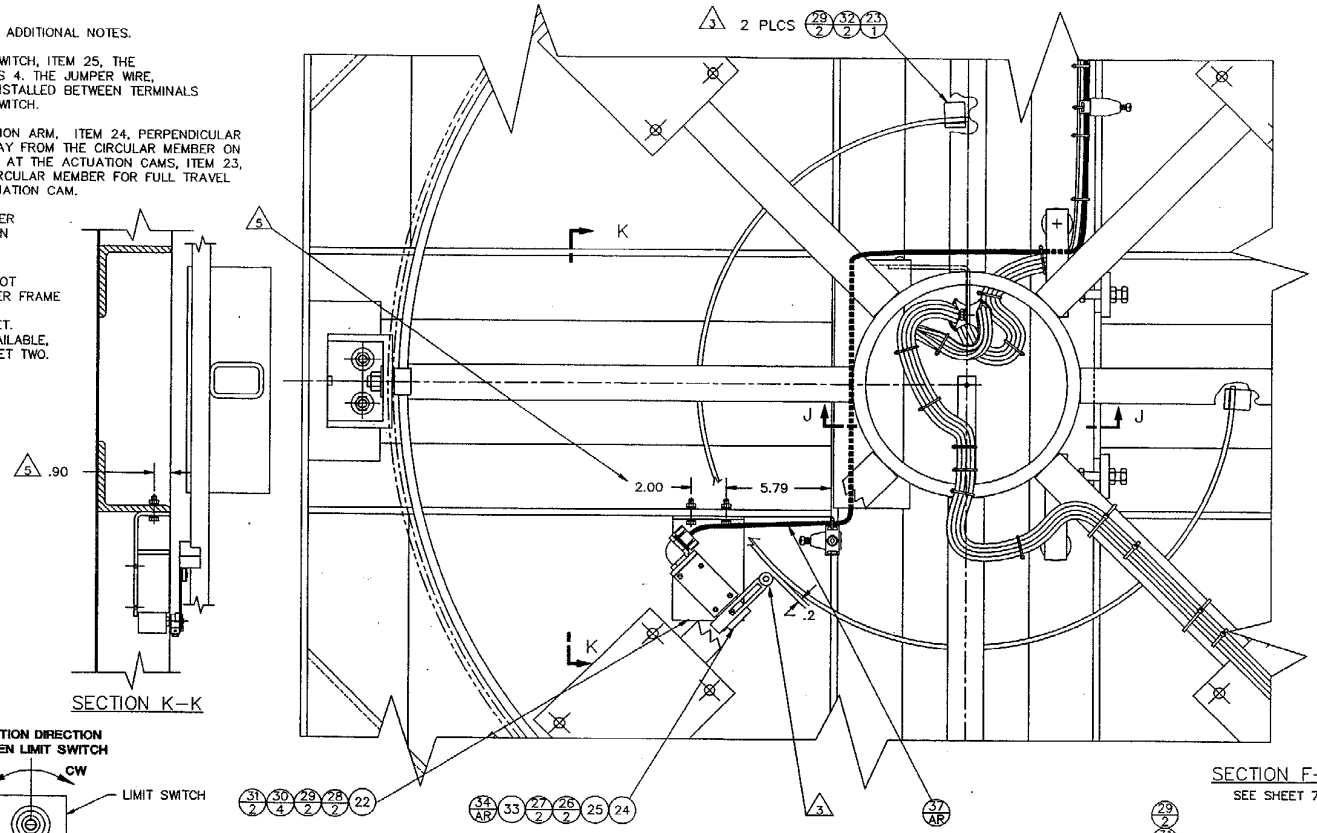
1. SEE SHEET TWO FOR ADDITIONAL NOTES.

△2 THE ROTARY LIMIT SWITCH, ITEM 25, THE COMMON TERMINAL IS 4. THE JUMPER WIRE, ITEM 61, MUST BE INSTALLED BETWEEN TERMINALS 4 AND 5 OF LIMIT SWITCH.

△3 LOCATE THE ACTUATION ARM, ITEM 24, PERPENDICULAR AND .20 INCHES AWAY FROM THE CIRCULAR MEMBER ON THE AZIMUTH FRAME AT THE ACTUATION CAMS, ITEM 23, AND CLEARS THE CIRCULAR MEMBER FOR FULL TRAVEL BETWEEN EACH ACTUATION CAM.

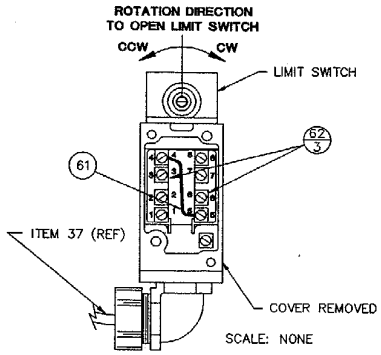
△4 WIRE LIMIT SWITCH PER THE INTERCONNECTION LIST BELOW.

△5 IF THE HOLES ARE NOT DRILLED IN POSITIONER FRAME FOR ITEM 22, AZ LIMIT SWITCH BRACKET. A DRILL TOOL IS AVAILABLE, SEE NOTE 5 ON SHEET TWO.

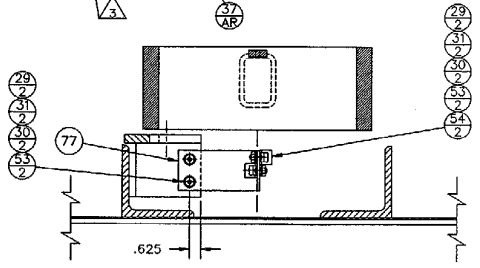


SECTION K-K

SECTION F-F
SEE SHEET 7



AZIMUTH LIMIT SWITCHES				CONTACTOR PANEL MOTOR DRIVE CONTROLLER TB1		
AZ LIMIT SWITCH	EAST	3	3 CONDUCTOR, 16 AWG, SDN CABLE	BLU	25
	COM	4		BLK	26
	WEST	6		RED	27



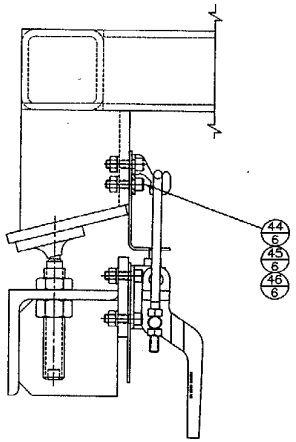
SECTION J-J

AZIMUTH LIMIT SWITCHES

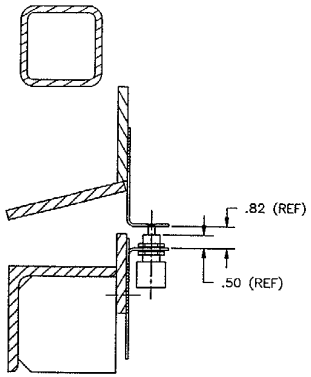
PREP. JHE 7/24/89	SIZE D	FSCM NO. 84147	DWG. NO. AE01E-D0212	REV. D
CHK.	SCALE 1/3		TE08UC4D SHEET 4	

NOTES:

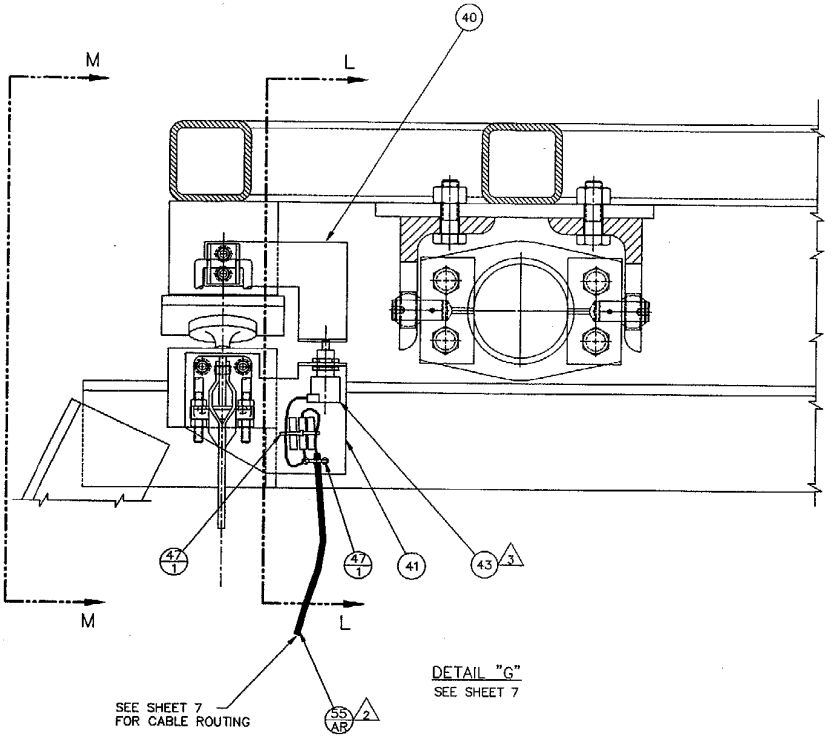
1. SEE SHEET TWO FOR ADDITIONAL NOTES.
2. EIGHT FEET FOR THIS INSTALLATION.
3. ADJUST THE SWITCH SO THAT THE ELEVATION FRAME IS .01 INCHES TO JUST COME TO REST ON THE FEET OF THE STOW FRAME. THE MOTOR MUST SHUT OFF.
4. ITEM 58, HEAT SHRINK AFTER CRIMPING.
5. ENDS OF UNUSED WIRES TO BE COVERED WITH HEAT SHRINK. DO NOT STRIP OR TAKE EXTRA MEASURES TO ISOLATE WIRES.



VIEW M–M

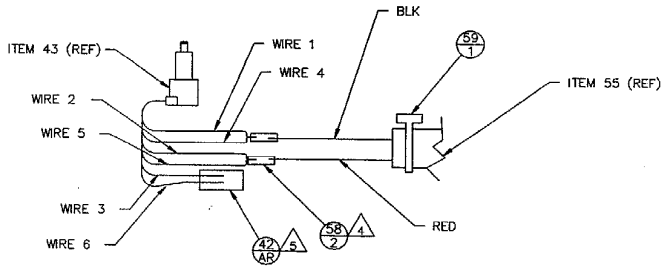


SECTION L–L



DETAIL "G"
SEE SHEET 7

SEE SHEET 7 FOR CABLE ROUTING



WIRING DETAIL

	UP LIMIT SWITCHES		CONTACTOR PANEL MOTOR DRIVE CONTROLLER		TB1
STOW LIMIT SWITCH	2 AND 5	2 CONDUCTOR, 16 AWG, SDN CABLE	BLK	17	
	1 AND 4		RED		
	3 AND 6				

STOW LIMIT SWITCH
STOW POSITION

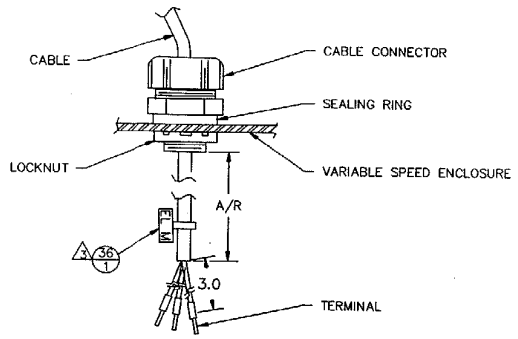
PREP. JHE 6/01/89	SIZE D	FSCM NO. 84147	DWG. NO. AE01E-D0212 REV. D
CHK.	SCALE 1/2	TEOBUC5D	SHEET 5

NOTES:

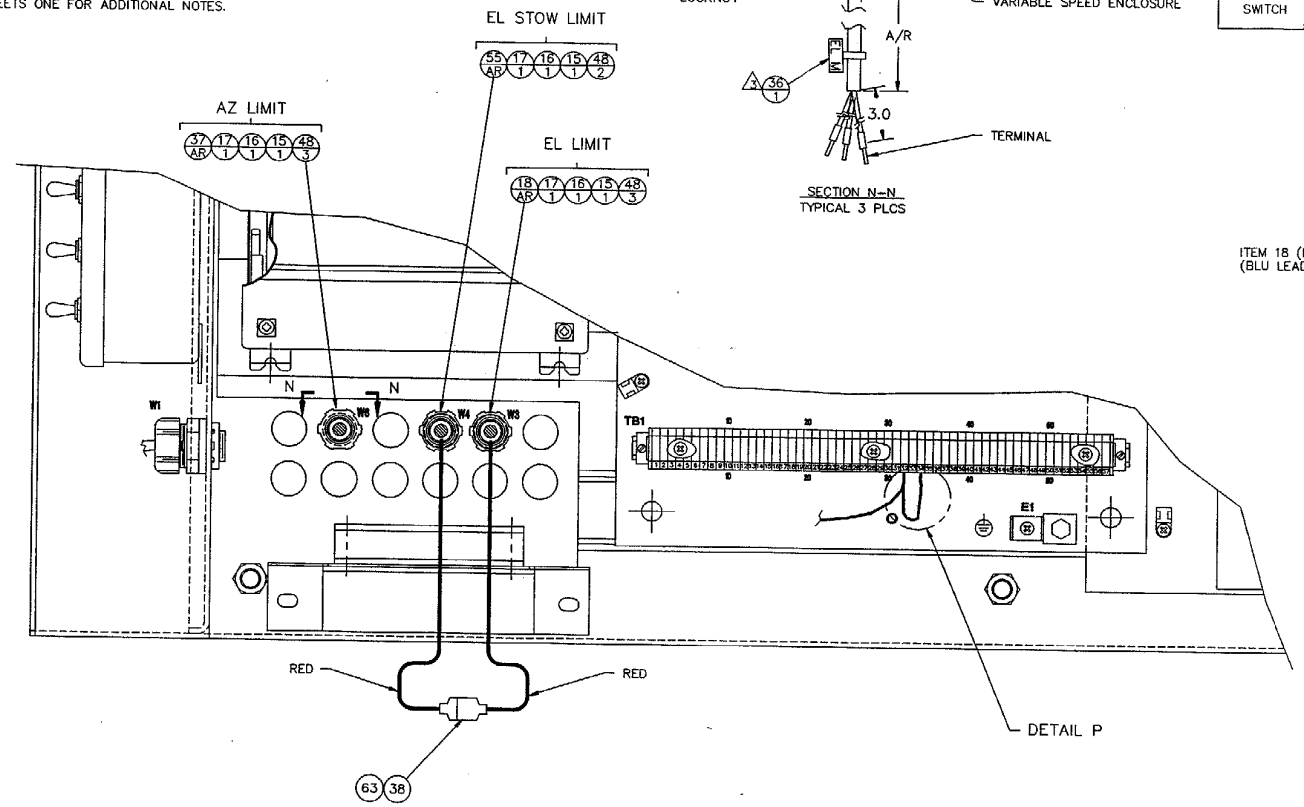
1. REMOVE 3 INCHES OF CABLE JACKET FROM CABLE, STRIP CONDUCTOR END .19 INCHES AND LOCATE CABLE IN CABLE CONNECTOR APPROXIMATELY AS SHOWN IN SECTION D–D.
   INSTALL TERMINALS AFTER THE CABLES HAVE BEEN FED THROUGH THE CABLE CONNECTORS.
2. REFER TO INTERCONNECT DIAGRAM AE01S–D0418 FOR HOOKUP INFORMATION.
3. MARK CABLE TIE (ITEM 36) PER WIRE LIST WITH PERMANENT INK. SEE SHEET 1 FOR DEFINITIONS OF THE ABBREVIATIONS USED.
4. SEE SHEETS ONE FOR ADDITIONAL NOTES.

WIRE LIST (3)

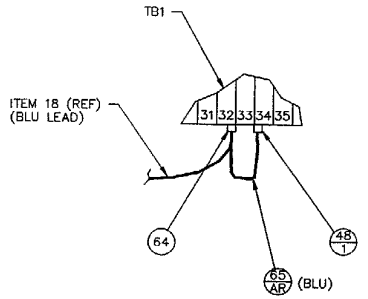
					TB1
EL DOWN/UP EL CREEP/ AZ ENABLE LIMIT SWITCH	DOWN	5 CONDUCTOR, 16 AWG, SDN CABLE	BLK	16 AWG	17
	COM		ORN	16 AWG	18
	AZ E		BLU	16 AWG	32
	EL C				34
	EL UP		RED	16 AWG	
EL STOW LIMIT SWITCH	UP	2 CONDUCTOR, 16 AWG, SDN CABLE	BLK	16 AWG	20
	COM		RED	16 AWG	
AZ LIMIT SWITCH	WEST	3 CONDUCTOR, 16 AWG, SDN CABLE	BLU	16 AWG	25
	COM		BLK	16 AWG	26
	EAST		RED	16 AWG	27



SECTION N–N
TYPICAL 3 PLCS



FRONT VIEW OF MOTOR DRIVE CONTROLLER ASSEMBLY



DETAIL P

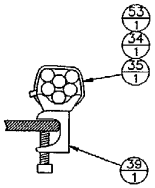
NOTE! THIS SHEET IS FOR RECORD PURPOSES ONLY. FOR ANTENNAS WITH EL STRUT LIMIT SWITCH, REFER TO SHEET 8.

AZIMUTH AND ELEVATION LIMIT SWITCHES, WIRING AT CONTACTOR PLATE

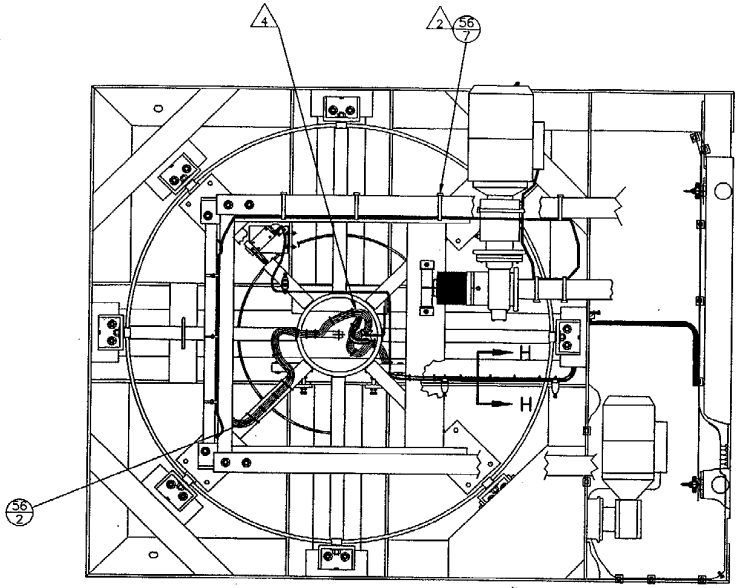
PREP: ROG 6/21/89	SIZE D	FSCM NO. 84147	DWG NO. AE01E–D0212	REV D
CHK:	SCALE NONE		TE08UC6D SHEET 6	

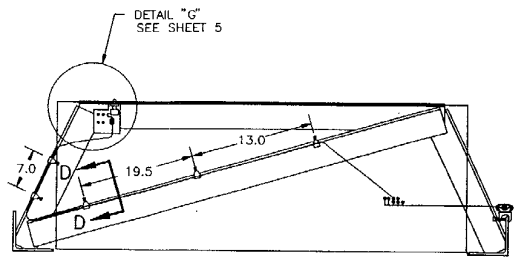
NOTES:

1. SEE SHEET TWO FOR ADDITIONAL NOTES.
2. PART OF MOTOR INSTALLATION, AE01E-D0253.
3. ITEM 35, CABLE TIE, ADDED BETWEEN EVERY CABLE MOUNT OF MULTIPLE CABLE RUNS.
4. PROVIDE 6" MINIMUM SERVICE LOOP WHEN ROUTING CABLES OVER AZIMUTH AXIS.

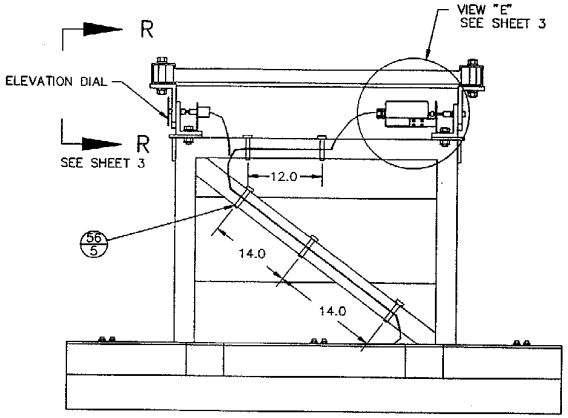


VIEW H-H
SCALE: 1=4

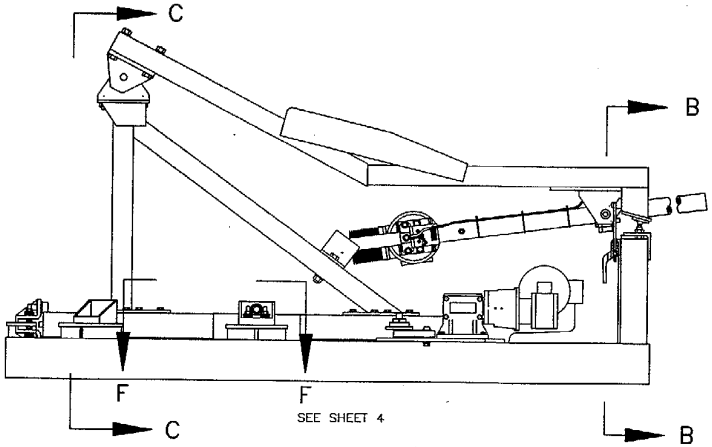


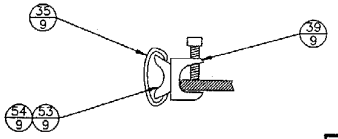


VIEW B-B



VIEW C-C
ROTATED





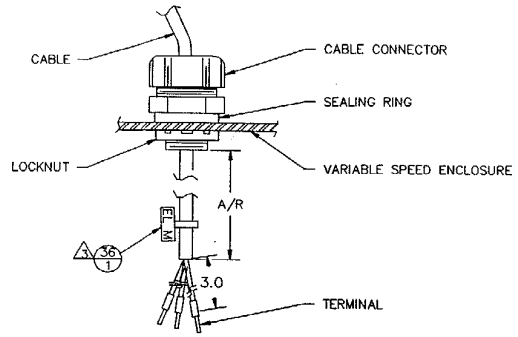
SECTION D-D
SCALE: 1=4

CABLE ROUTING

PREP: BENALLY 8/8/89	SIZE D	FSCM NO. 84147	DWG NO. AE01E-D0212	REV D
CHK:	SCALE 1/8		TEOSUC7D SHEET 7	

NOTES:

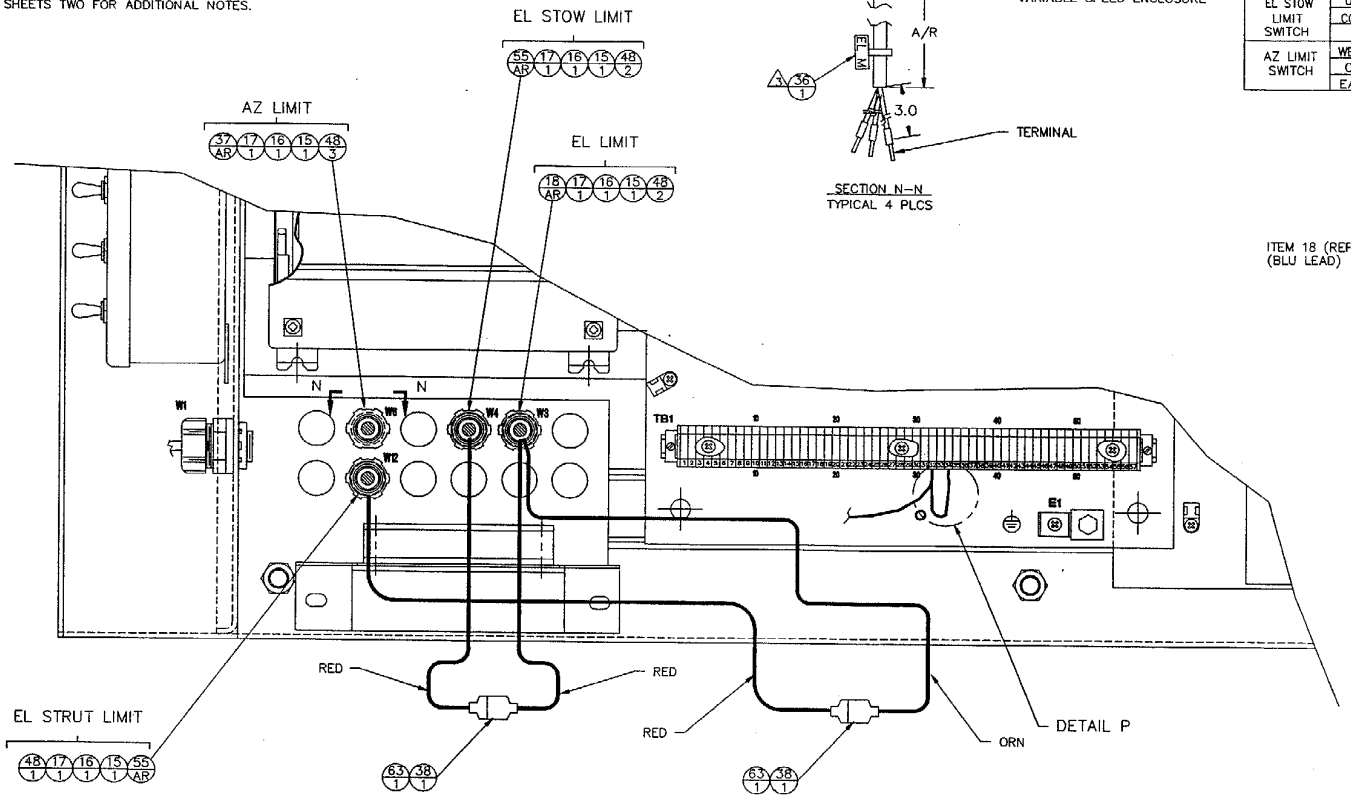
1. REMOVE 3 INCHES OF CABLE JACKET FROM CABLE, STRIP CONDUCTOR END .19 INCHES AND LOCATE CABLE IN CABLE CONNECTOR APPROXIMATELY AS SHOWN IN SECTION D–D.
   INSTALL TERMINALS AFTER THE CABLES HAVE BEEN FED THROUGH THE CABLE CONNECTORS.
2. REFER TO INTERCONNECT DIAGRAM AE01S–D0418 FOR HOOKUP INFORMATION.
3. MARK CABLE TIE (ITEM 36) PER WIRE LIST WITH PERMANENT INK. SEE SHEET TWO FOR DEFINITIONS OF THE ABBREVIATIONS USED.
4. SEE SHEETS TWO FOR ADDITIONAL NOTES.



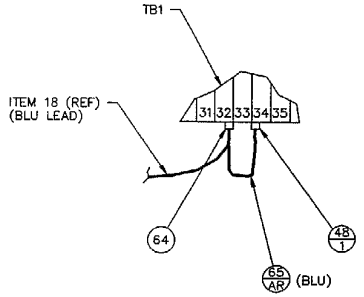
SECTION N–N
TYPICAL 4 PLCS

WIRE LIST (3)

					TB1
EL STRUT LIMIT SWITCH	COM	2 CONDUCTOR, 16 AWG, SDN CABLE	BLK	16 AWG	18
	LOCK		RED	16 AWG	
EL DOWN/UP EL CREEP/ AZ ENABLE LIMIT SWITCH	COM	5 CONDUCTOR, 16 AWG, SDN CABLE	ORN	16 AWG	
	DOWN		BLK	16 AWG	17
	AZ E		BLU	16 AWG	32
	EL C				34
	EL UP		RED	16 AWG	
EL STOW LIMIT SWITCH	UP	2 CONDUCTOR, 16 AWG, SDN CABLE	BLK	16 AWG	20
	COM		RED	16 AWG	
AZ LIMIT SWITCH	WEST	3 CONDUCTOR, 16 AWG, SDN CABLE	BLU	16 AWG	25
	COM		BLK	16 AWG	26
	EAST		RED	16 AWG	27



FRONT VIEW OF MOTOR DRIVE CONTROLLER ASSEMBLY

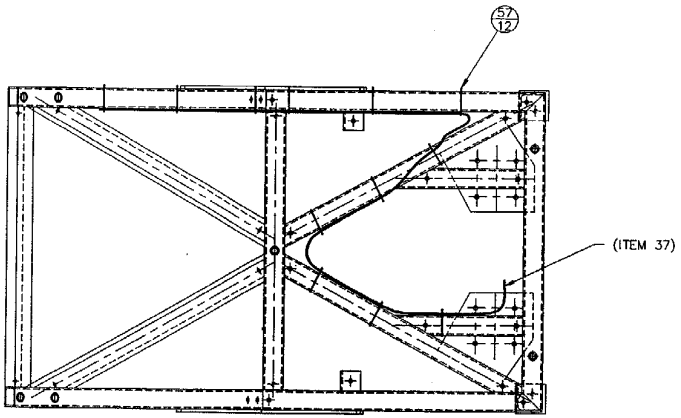


DETAIL P

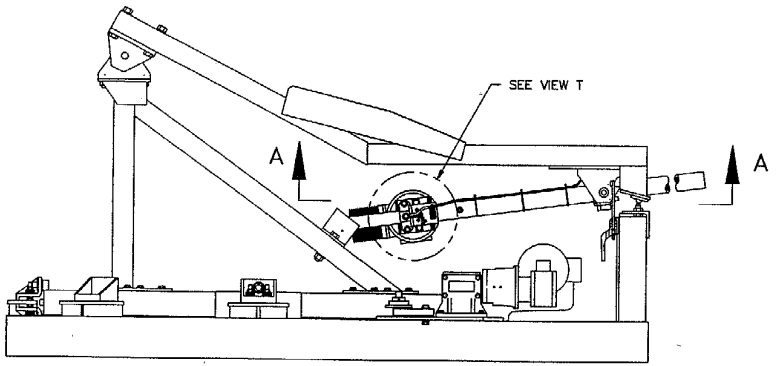
AZIMUTH, ELEVATION AND STRUT LIMIT SWITCHES, WIRING AT CONTACTOR PLATE

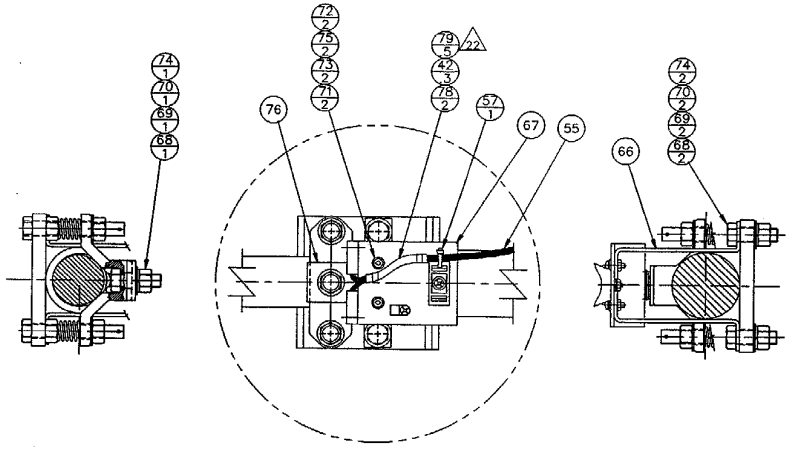
PREP. JHE 10/20/89	SIZE D	FSCM NO. 84147	DWG. NO. AE01E–D0212	REV. D
CHK.	SCALE NONE		TEOSUCBD	SHEET 8

STRUT LIMIT SWITCHES			CONTACTOR PANEL MOTOR DRIVE CONTROLLER TB1	
STRUT LIMIT SWITCH	COM (RED)	2 CONDUCTOR, 16 AWG, SDN CABLE	BLK 16 AWG	18
	LOCK (RED)		RED 16 AWG	



VIEW A–A





VIEW T
SCALE: 1/2

STRUT LIMIT SWITCH INSTALLATION

PREP. ROG 4/1/91	SIZE D	FSCM NO. 84147	DWG. NO. AE01E-D0212	REV. D
CHK.	SCALE 1/8		TEOBUC9D	SHEET 9 OF 9

DWG NO. AE01E-D0214 SH 1

REVISIONS					
MF	ZONE	REV.	DESCRIPTION	DATE	APPROVED
			REL TO PRODUCTION	6/29/89	EB
		A	SEE DCN P012.94	1/30/90	EB
		B	SEE DCN P018.79 (A)	7/29/91	RGG

NOTES: (UNLESS OTHERWISE SPECIFIED)

1. REMOVE ALL BURRS AND SHARP EDGES.
2. DIMENSIONS APPLY BEFORE PLATING.
3. INTERPRET DRAWING PER ANSI Y14.5M-1982.
4. SEE SHEETS 2,3,4 AND 5 FOR ADDITIONAL NOTES.
5. DEFINITION OF ABBREVIATIONS USED:
   "EL" DENOTES ELEVATION.
   "AZ" DENOTES AZIMUTH.
   "POL" DENOTES POLARIZATION.
   "CCW" DENOTES COUNTER-CLOCKWISE.
   "CW" DENOTES CLOCKWISE.
6. DO NOT FASTEN CABLE TIES
   UNTIL ALL CABLES ARE INSTALLED AND ROUTED FROM THE MOTOR, LIMIT SWITCH, REMOTE CONTROL AND POLARIZATION DRIVE INSTALLATION.
   SEE LIMIT SWITCH INSTALLATION FOR FINAL CABLE ROUTING AND THE INSTALLATION OF CABLE TIES.
7. CABLE ROUTING SHOULD BE DONE IN SUCH A MANNER THAT THE CABLES ARE SUPPORTED WITHIN 12 INCHES FROM EACH CORD GRIP CONNECTOR AND THERE AFTER BE SUPPORTED EVERY 4 1/2 FEET MAXIMUM USING THE SUPPLIED MOUNTING HARDWARE.
8. TO INSTALL THE CRIMP TERMINALS, USE PANDUIT CT-500 CRIMP TOOL OR EQUIVALENT.
9. TO INSTALL THE CRIMP AMPHENOL RECEPTACLE WITH SOCKET, USE AMPHENOL CRIMP TOOL P/N 347-100, LOCATOR P/N 357-300-02, AND INSERTER BIT P/N 356-400-1 WITH HANDLE P/N 356-200 OR EQUIVALENT.
10. "DANGER" EQUIPMENT IS AT LINE VOLTAGE WHEN AC POWER IS CONNECTED TO THE LOCAL MOTOR CONTROLLER. ALL UNGROUNDED CONDUCTORS OF AC POWER LINE MUST BE DISCONNECTED FROM THE CONTROLLER BEFORE IT IS SAFE TO TOUCH ANY INTERNAL PARTS OF THIS EQUIPMENT. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN FATAL INJURY.
11. "WARNING" THIS EQUIPMENT SHOULD BE ADJUSTED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE EQUIPMENT AND THE HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY INJURY.
12. BE SURE TO WEAR SAFETY GLASSES AT ALL TIMES WHEN PERFORMING MAINTENANCE.
13. BE SURE THE INPUT DISCONNECT IS IN THE CORRECT POSITION, EITHER 'ON' OR 'OFF' DEPENDING ON THE WORK TO BE PERFORMED.
14. "CAUTION" THE ANTENNA SHOULD BE DEPLOYED WITH FULL VISIBILITY OF THE AREA ABOVE AND AROUND THE ANTENNA.
15. ADDITIONAL NOTES ARE ON EACH SHEET OF THIS INSTALLATION, FOLLOW THESE NOTES FOR DETAIL INSTALLATION INSTRUCTIONS.

QTY	ITEM NO.	U OF M	ANDREW PART NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	REF. DESIGNATOR	NOTES
	DASH NO./DETAIL				PARTS LIST		
8	41	EA	EWSHF-20605		WASHER,FLAT,1/4x.75,CRES		
4	40	EA	EWSHL-11060		WASHER,LOCK,1/4,CRES		
4	39	EA	ENUTS-11070		NUT,HEX,1/4-20,SST		
2	38	EA	ESCRS-73616		SCR,HEX CAP,1/4-20x1.0 LG,SST		
2	37	EA	ESCRS-73618		SCR,HEX CAP,1/4-20x1.25 LG,SST		
1	36	EA	AE01D-C0737		BRKT,CABLE MT,AZ RESLVR		
.25	35	FT	EWIRH-08206		WIRE,HOOK UP,18 AWG,GRN		
2	34	EA	ERESM-11020		RES,M FLM,1.10K OHM,1/4W,1%		
4	33	EA	ENUTS-11020		NUT,HEX,#4-40,SST		
4	32	EA	EWSHL-11020		WASHER,LOCK,#4,CRES		
4	31	EA	EWSHF-10201		WASHER,FLAT,#4,CRES		
4	30	EA	ESCRS-22208		SCREW,PPH,#4-40 X .50 LG		
4	29	EA	ENUTS-11030		NUT,HEX,#6-32,SST		
4	28	EA	EWSHL-11030		WASHER,LOCK,#6,CRES		
4	27	EA	EWSHF-10302		WASHER,FLAT,#6,CRES		
4	26	EA	ESCRS-42309		SCREW,PPH,#6-32 X .56 LG		
1	25	EA	ERCPE-91460		COVER,RCPT BOX,WTHPRF		
	24						
36	23	EA	ECLAT-11020		CABLE TIE,18 LBS TS		
2	22	EA	ECLAT-41020		CABLE TIE,FLAG,18 LBS		
1	21	EA	AE01C-C0411		CABLE ASSY,GROUND JUMPER		
1	20	EA	AE01C-D0401		CABLE HARNESS,MOTOR CONTROL		
3	19	EA	ETRMB-11210		TERM BLOCK,10 POS,22-12 AWG		
1	18	EA	ESHFT-13022		SHFT,.2497 DIA,2.75 LG,SST		
1	17	EA	208364		RESOLVER MOUNTING PLATE		
1	16	EA	200852		STICK WAX		
2	15	EA	12225		LUBRICANT		
.3	14	FT	ETUBE-11201		TUBE,EPDM,BLK,3/4 ID,1/16 WALL		
18	13	EA	ETERP-12130		TERMINAL,PIN,22 AWG		
2	12	EA	ECONC-93024		SEALING RING,1/2 CONDUIT		
2	11	EA	ECONC-91101		LOCKNUT,CONDUIT FTG,1/2"		
2	10	EA	ECNNC-40103		CONN,CA..375DIA,1/2,STR		
2	9	EA	9912-177		DRIVE PIN,1/4Dx.75LG,TYP E		
2	8	EA	205711-3		COUPLING,1/4 x 1/4 HELICAL		
6	7	EA	47384-2		MOTOR MOUNT CLEAT		
2	6	EA	205711-4		COUPLING,1/4 x 1/8 HELICAL		
1	5	EA	ESHFT-13010		SHFT,.2497 DIA,1.25 LG,SST		
1	4	EA	AE01D-D0651		BRACKET,EL RESOLVER		
4	3	EA	9997-227		WASHER,FLAT,5/8,GALVS		
2	2	EA	45980-22		BOLT ASSY,5/8-11x2.5,GALVS		
2	1	EA	208349		RESOLVER		

THE INSTALLATION, MAINTENANCE OR REMOVAL OF AN ANTENNA REQUIRES QUALIFIED, EXPERIENCED PERSONNEL. ANDREW INSTALLATION INSTRUCTIONS HAVE BEEN WRITTEN AND ILLUSTRATED FOR SUCH INSTALLATION PERSONNEL. ANTENNA SYSTEMS SHOULD BE INSPECTED ONCE A YEAR BY QUALIFIED PERSONNEL TO VERIFY PROPER INSTALLATION, MAINTENANCE AND CONDITION OF EQUIPMENT. ANDREW DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR THE RESULTS OF IMPROPER OR UNSAFE INSTALLATION OR MAINTENANCE PRACTICES.

NOTICE: These drawings and specifications are the property of ANDREW CORPORATION. All information contained herein which is not known generally in the field of ANDREW shall be confidential except to any extent to which it is established to have been known previously from sources other than ANDREW. These drawings and specifications may not be reproduced, copied or used as the basis for the manufacture or sale of apparatus without written permission.

AE01K-D0240	ESA45AP	
NEXT ASSY.	USED ON	

APPLICATION

MATERIAL

FINISH

UNLESS OTHERWISE SPECIFIED, DUAL DIMENSIONED DWGS ARE IN MILLIMETERS [INCHES]. SINGLE DIMENSIONED DWGS ARE IN INCHES.

METRIC

TOL. ON METRIC DIM.: .X=±0.5, .XX=±0.2
HOLE DIAMETERS:
UNDER 6.350 = +0.13 -0.13
6.35 TO 12.70 = +0.15 -0.13
OVER 12.70 = +0.30 -0.13
ANGLES: ±1.0°
CONCENTRICITY BETWEEN DIA. OR A COMMON AXIS TO BE WITHIN 0.25 R.

US CUSTOMARY [ ]

TOL. ON [ ] DIM.: .X=±.1 .XX=±.02, .XXX=±.008
HOLE DIAMETERS
UNDER .2510 = +.005 -.005
.251 TO .2800 = +.005 -.020
OVER .2800 = +.005 -.005
ANGLES: ±1.0°
CONCENTRICITY BETWEEN DIA. OR A COMMON AXIS TO BE WITHIN .010 R.

DRAWN	JHE	5/11/89
CHECKED	RJP	6/23/89
APPD. ENGRG.	JHE	6/24/89
APPD. QC	HRM	6/25/89
APPD. MFG.	AD	6/26/89

THIRD ANGLE PROJECTION

ANDREW CORPORATION
Electronic Technology Center
Richardson, TX U.S.A.

INSTL,RESOLVERS AND REMOTE CONT, 4.5M TRANSPORTABLE

SIZE	FSCM NO.	DWG. NO.	REV.
D	84147	AE01E-D0214	B
SCALE	NONE	SHEET	1 OF 5

TE08UE1B

PROD. OR. 628 DISTR. P

△1

TENSIONING PROCEDURES A-325 HARDWARE

1. LUBRICATE BOLT THREADS WITH STICK WAX (ITEM 16) TO REDUCE FRICTION. DO NOT ALLOW WAX UNDER FLAT WASHER.
2. AFTER CONNECTIONS ARE COMPLETED, TIGHTEN BOLTS UNTIL SURFACES ARE JOINED AND NUTS ARE SNUG i.e. FULL EFFORT OF PERSON USING ORDINARY SPUD WRENCH. DO NOT PROCEED WITH STEPS 3 & 4 BELOW UNLESS THE CONNECTION IS FINAL. IF BOLTS ARE LOOSENED AFTER STEPS 3 AND 4, DISCARD AND REPLACE WITH NEW HARDWARE. REPEAT ALL STEPS.
3. MARK NUTS AND ENDS OF BOLTS WITH STRAIGHT LINE (SEE FIGURE 1).
4. TIGHTEN NUTS FURTHER WITH EXTRA LONG WRENCH OR POWER WRENCH UNTIL NUTS ARE MOVED 1/3 TURN (120°±30°) PER FIGURE 2.

USE FELT MARKER

FIG. 1 BEFORE TENSIONING

FIG. 2 AFTER TENSIONING

△2 APPLY ITEM 15 ON TO AND INTO THE HELICAL OF ITEMS 6 AND 8 BEFORE INSTALLING ITEM 10.

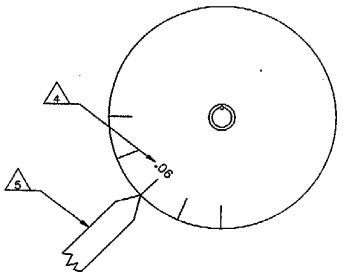
△3 USE 1.12 INCHES OF ITEM 14 TO COVER ITEMS 6 AND 8 EACH.

△4 SETTING ELEVATION RESOLVER, ITEM 1, LOOSE MOUNTING CLEAT SCREWS, ITEM 7, AND ROTATE RESOLVER AS FOLLOWS: ROTATE RESOLVER, ITEM 1, UNTIL THE READING ON THE ANTENNA CONTROLLER OR INSTALLATION INSTRUMENT READS 90° WHEN THE ELEVATION FRAME REST ON THE ANTENNA POSITIONER FRAME IN THE HOME POSITION. WHEN RESOLVER IS IN THE CORRECT POSITION, RETIGHTEN THE MOUNTING CLEAT SCREWS.

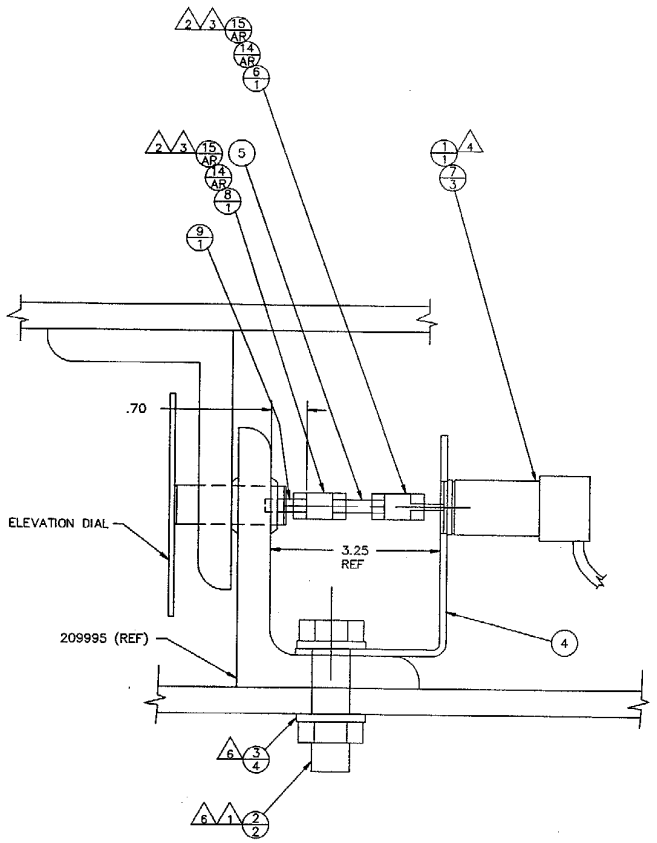
△5 ELEVATION DIAL ON POSITIONER IN THE DOWN POSITION.

△6 REPLACE EXISTING GALVANIZED 5/8 HARDWARE WITH SUPPLIED NEW HARDWARE, ITEMS 2 AND 3. INSTALL THE NEW HARDWARE PER THE TENSIONING PROCEDURES OF AN A-325 HARDWARE.

7. SEE SHEET 1 FOR ADDITIONAL NOTES.



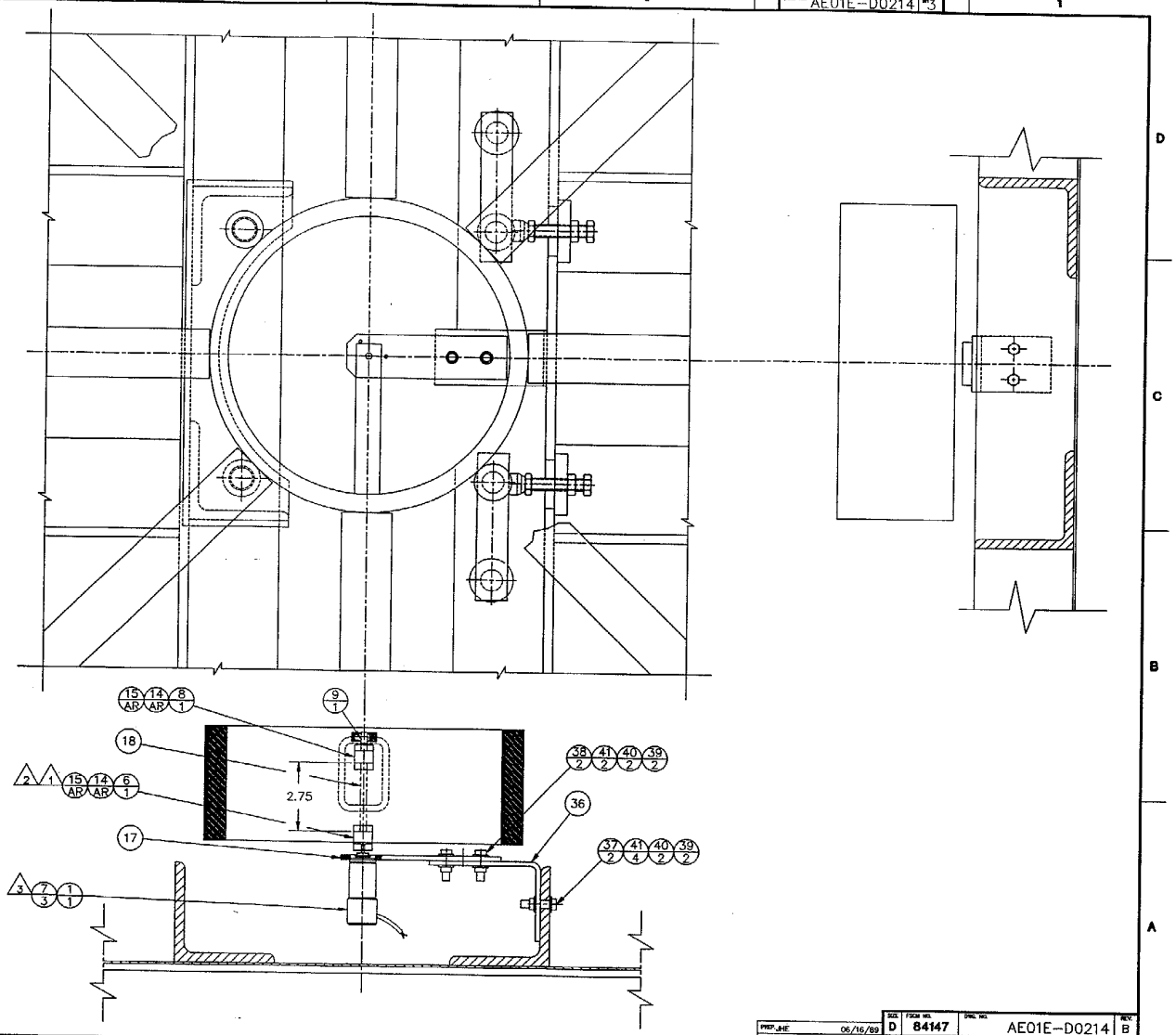
ELEVATION DIAGRAM



PREPARED	6/11/99	SIZE D	FSCM NO. 84147
CHK		SCALE FULL	DWG. NO. AE01E-D0214 REV
			TED8UE2 SHEET 2

NOTES:

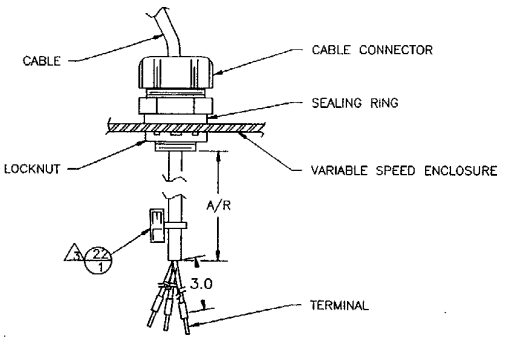
1. APPLY ITEM 15 ON TO AND INTO THE HELICAL OF ITEMS 6 AND 8 BEFORE INSTALLING ITEM 10.
2. USE 1.12 INCHES OF ITEM 10 TO COVER ITEMS 6 AND 8 EACH.
3. SETTING AZIMUTH RESOLVER, ITEM 1, LOOSE MOUNTING CLEAT SCREWS, ITEM 7, AND ROTATE RESOLVER AS FOLLOWS: ROTATE RESOLVER, ITEM 1, UNTIL THE READING ON THE ANTENNA CONTROLLER OR INSTALLATION INSTRUMENT READS 180° WHEN THE AZIMUTH FRAME REST ON THE ANTENNA POSITIONER FRAME IN THE HOME POSITION. WHEN RESOLVER IS IN THE CORRECT POSITION, RETIGHTEN THE MOUNTING CLEAT SCREWS.
4. ~~INSTALL ITEM 17 ON TOP OF AE01D-C0737, AZ CABLE MOUNT, RESOLVER BRACKET, WHICH IS INSTALLED IN THE AE01E-D0212 LIMIT SWITCH INSTALLATION.~~
5. SEE SHEET 1 FOR ADDITIONAL NOTES.



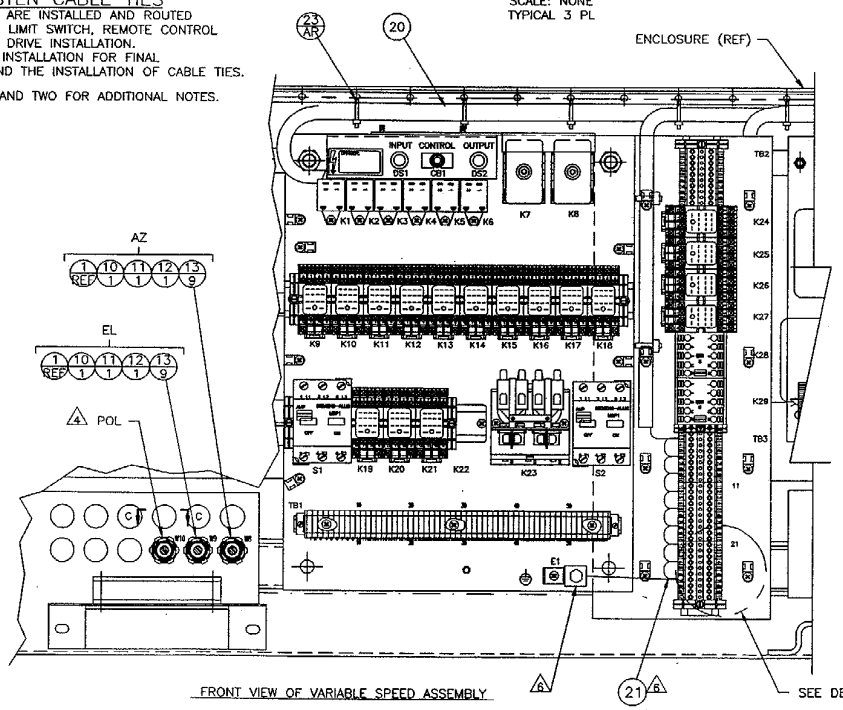
PREP. JHE 06/16/89	SIZE D	FSCM NO. 84147	DWG NO. AE01E-D0214	REV B
CHK.	SCALE 1/2	TEDBUE3B	SHEET 3	

NOTES:

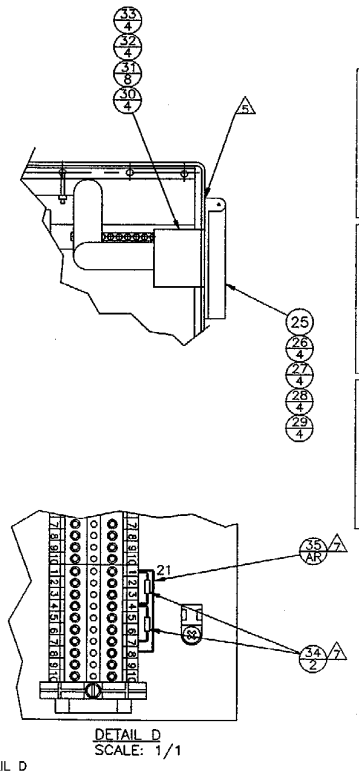
1. REMOVE 3 INCHES OF CABLE JACKET FROM CABLE, STRIP CONDUCTOR END .19 INCHES AND LOCATE CABLE IN CABLE CONNECTOR APPROXIMATELY AS SHOWN IN SECTION C–C.
   INSTALL TERMINALS AFTER THE CABLES HAVE BEEN FED THROUGH THE CABLE CONNECTORS.
2. REFER TO INTERCONNECT DIAGRAM AE01S–D0456 FOR HOOKUP INFORMATION.
3. MARK CABLE TIE (ITEM 22) PER WIRE LIST WITH PERMANENT INK. SEE SHEET 1 FOR DEFINITIONS OF THE ABBREVIATIONS USED.
4. PART OF THE POLARIZATION INSTALLATION KIT, PLKPFAP.
5. REMOVE HOLE COVER FOR CABLE CONNECTOR OF CABLE HARNESS (ITEM 20).
6. TERMINATE ITEM 21 AS SHOWN WITH FLAG AND NOTE.
7. INSTALL IF MOTORIZED POLARIZATION IS NOT USED.
8. DO NOT FASTEN CABLE TIES UNTIL ALL CABLES ARE INSTALLED AND ROUTED FROM THE MOTOR, LIMIT SWITCH, REMOTE CONTROL AND POLARIZATION DRIVE INSTALLATION. SEE LIMIT SWITCH INSTALLATION FOR FINAL CABLE ROUTING AND THE INSTALLATION OF CABLE TIES.
9. SEE SHEETS ONE AND TWO FOR ADDITIONAL NOTES.



SECTION C–C
SCALE: NONE
TYPICAL 3 PL



FRONT VIEW OF VARIABLE SPEED ASSEMBLY



DETAIL D
SCALE: 1/1

AZ EAST	K6	+	BLACK	
		–	RED	
AZ WEST	K5	+	BLACK	
		–	WHITE	
EL UP	K3	+	BLACK	
		–	GREEN	
EL DOWN	K4	+	BLACK	
		–	BLUE	
CCW POL	K2	+	BLACK	
		–	YELLOW	
CW POL	K1	+	BLACK	
		–	BROWN	

TB3

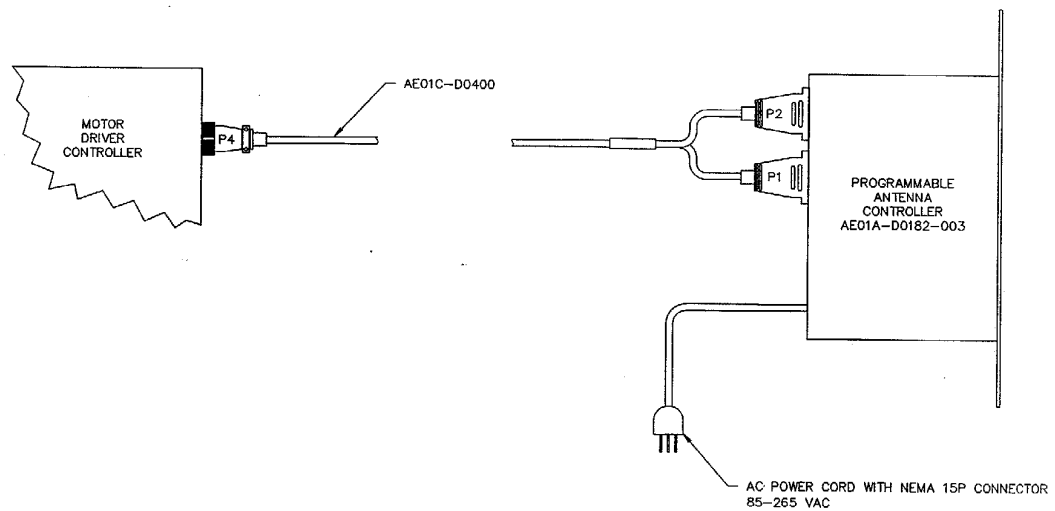
AZIMUTH RESOLVER ON ANTENNA	RED	1	BLACK	
	BLACK	2	ORANGE	6
	SHIELD	3		
	BLACK	4	RED	
	WHITE	5	WHITE	6
	SHIELD	6		
	BLACK	7	RED	
	GREEN	8	GREEN	6
	SHIELD	9		
ELEVATION RESOLVER ON ANTENNA	BLACK	11	RED	
	RED	12	BLUE	6
	SHIELD	13		
	BLACK	14	RED	
	WHITE	15	YELLOW	6
	SHIELD	16		
	BLACK	17	RED	
	GREEN	18	BROWN	6
	SHIELD	19		
POLARIZATION RESOLVER ON ANTENNA 4	BLACK	21	RED	
	RED	22	ORANGE	6
	SHIELD	23		
	BLACK	24	GREEN	
	WHITE	25	WHITE	6
	SHIELD	26		
	BLACK	27	GREEN	
	GREEN	28	YELLOW	6
	SHIELD	29		

AE01C–D0401
17 PAIR SHIELDED, 22 AWG, CABLE
AE01C–C0411

TB3

AZIMUTH, ELEVATION AND POLARIZATION RESOLVERS WIRING AT CONTACTOR PLATE

PRJ: RGG	8/15/89	SIZE D	FSCM NO. 84147
CHK.		SCALE 1/2	DWG. NO. AE01E–D0214 REV.
		TEOBUE4	SHEET 4



PROD: RGG 8/21/89	SIZE D	FSCM NO. 84147	DWG. NO. AE01E-D0214 REV. B
CHK.	SCALE NONE		TEOBUES8 SHEET 5 OF 5